KENWOOD

SERVICE MANUAL

TS-711A/E,TS-811A/B/E CD-10, TU-5,VS-1

144MHz/430MHz ALL MODE TRANSCEIVER



Photo is TS-711A.

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WODEL	TS-711A (K,M1,M2,X)	TS-711E T.W)	TS-811A (K)	TS-811B (M,X) TS-811E (T,W)
SWITCH UNIT	. X41-1580-11	X41-158C-61	X41-1580-01	X41-1580-01 (M,X) X41-1580-62 (T,W)
AVR UNIT	X43-1490-11	X43-1490-11	X43-1490-11	X43-1490-11
RF UNIT	X44-1620-11	X44-1620-01	. X44-1650-11	X44-1650-01
FINAL UNIT	X45-1380-11	X45-1380-11	X45-1390-11	X45-1390-01 (M,X X45-1390-61 (T,W)
IF UNIT	X48-1400-11	X48-1400-00	X48-1400-01	X48-1400-01
AF UNIT	X49-1180-00	X49-1180-00	X49-1180-00	X49-1180-00
PLL UNIT	X50-1990-11	X50-1990-00	X50-1990-12	X50-1990-01
HET UNIT	- 1	_	X50-2010-10	X50-2000-00
TONE UNIT	1 -	X52-1290-60	_	X52-1290-60 (T,W
CONTROL UNIT	X53-1410-11 (K,M1) X53-1410-21 (M2,X)	X53-1410-51 (T) X53-1410-61 (W)	X53-1410-12 (K)	X53-1410-22 (M,X X53-1410-52 (T) X53-1410-62 (W)
DISPLAY UNIT	X54-1820-11	X54-1820-11	X54-1820-11	X54-1820-11

Table 1 TS-711A/E, TS-811A/B/E PC Board chart

TS-711A/E

Destination	Frequency (MHz)	vFO step (kHz)	TX OFFSET DISPLAY	Repeater shift (kHz)	Tone circuit
K,M1,M2	144.000~ 147.995	5	- S +	±600	Option
т	144.000~ 145.995	12.5	- S +	= 600	1750Hz Tone Burst
W	144.000~ 145.995	12.5	- \$ +	= 600	1750Hz Tone
X	144.000~	5	- S ÷	± 600	Option

TS-811A/B/E

Destination	Frequency (MHz)	VFO step (kHz)	OFFSET DISPLAY	Repeater shift (kHz)	Tone circuit
К	430.000~ 450.000	25	- S +	± 5	Option
M,X	430.000~ 440.000	25	- S +	±5	1750Hz Tone Burst
Т	430.000~	12.5	- S +	±1.6	1750Hz Tone
W	430.000~ 440.000	12.5	- S +	+7.6 -1.6	Option

Table 2 Frrequency configuration of destination

			-	K.M1,M2	1	T.W
MODE	STEP CH.Q	OFF	1		N	1,
	OFF	10Hz		5kHz	T	12.5kHz
FM	ON	100Hz	Ţ	5kHz	ì	5kHz
SSB	OFF	10Hz	1	5kHz	1	5kHz
CW	ON	100Hz	i	1kHz	I	1kHz

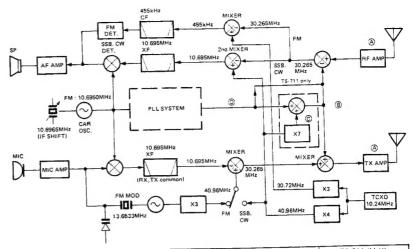
Table 3 Frequency step function's chart

TS-711/TS-811 FREQUENCY CONFIGURATION

Fig. 1 represents the frequency configuration. Reception uses a double conversion superheterodyne system, in which the second IF (Intermediate Frequency) differs according to the mode. Here, the signal from the antenna is mixed with the PLL (Phase Locked Looo) local OSC (Oscillator) signal in the first mixer common to the respective modes and is then converted to the first IF at 30.265MHz. At this point, the first IF is separated between SSB/CW and FM modes. In SSB/CW, it is mixed with a 40.96MHz local OSC signal (4 times the TCXO frequency) in the second mixer (Q34) and is converted to the second IF at 10.695MHz. Then, this IF is product detected with a 10.6965MHz carrier. In the FM mode, it is mixed

with the 30.72MHz local OSC signal (3 times the TCXO frequency) in the second mixer (Q36) and is converted to the second IF at 455kHz. Then, this IF is detected. In SSB/CW transmission, the SSB/CW signal at 10.695MHz is mixed with the 40.96MHz local OSC signal (4 times the TCXO frequency) in the balanced mixer (Q6/Q7) and is converted to a 30.265MHz signal. It is then mixed with the 113.735–115.725MHz PLL signal to the transmission frequency. In case TS-811, PLL signal (113.015–123.005 MHz) mixed with the 296.720MHz (A), 286.720MHz (B,E) HET signal to the transmission frequency. In the FM mode, a 13.6533MHz X'tal OSC signal, used in place of the 40.96 MHz local OSC signal, is modulated and multiplied by 3 to a 40.96MHz local OSC signal.

CIRCUIT DESCRIPTION



Modei	TS-711 (K,M1,M2,X)	TS-711 (T,W)	TS-811 (K)	TS-811 (M,X) TS-811 (T,W)
	144,000 - 147,995MHz	144.000 - 145.995MHz	1 400,000 - 4-0,000	430.000 - 439.995MHz
(A) (B)	113,735 - 117,730MHz		399.735 - 409.730MHz	399.735 - 419.730MHz
l ©	-	-	296.720MHz	286.720MHz
8	113 735 - 117.730MHz	113.735 - 115.730MHz	113.015 - 123.005MHz	113.015 - 123.005MHz

Fig. 1 Frequency-related block diagram

RF UNIT

(X44-1620-XX) : TS-711, (X45-1650-XX) : TS-811

Reception system

The signal input from the RA terminal enters the RF amplifier (Q1) through the ATT circuit (—20dB) TS-711 only. The RF amplifier uses GaAs FET: 3SK129. The input uses a 2-pole helical and the output a 3-pole helical, thus obtaining the desired bandwidth and skirt attenuation. The input signal is converted in the receiving mixer, Q2: C-MOS FET: 3SK122 (in the TS-811, GaAs FET: 3SK129), to the first IF at 30.265MHz. Then, the first IF is convertes to the RIF level signal through the 2-stage MCF (Monolithic Crystal Filter) and is output to the IF unit.

• Transmission system (TS-711)

The lower IF signal (30.265MHz) from the IF unit is mixed with the HET signal in the FET balanced mixer (Q3, Q4 : 2SK192A(GR)*N) and converted to the transmission frequency. From this transmission signal, any spurious component is eliminated by the 5-stage VCT (Varactor Tuned) circuit in which the PLL unit CV (Correction Voltage) is used.

Further, the transmission signal is amplified up to the drive output level of for the output transceiver 0.3W for the output transceiver in amplifier Q6. This output is fed to the final module.

Transmission system (TS-811)

The lower IF signal (30.625MHz) from the IF unit is mixed with the HET signal in the Schottky-type DBM (Double Balanced) mixer and is converted to the transmission frequency. From this signal, any spurious component is eliminated by the 2-stage band-pass amplifier with small Hi-Q helical coils. In particular, the second-stage band-pass amplifier has helical coils connected in series, thus providing acute BPF characteristics.

Further, the transmission signal is amplified up to the drive output level of for the output transceiver 0.35W for the output transceiver in amplifier Q4. This output is fed to the final module. VR1 at Q4 controls Q4's idling current The idling current is set to about 15mA for this stage.

Item	Rating	
Nominal center frequency	30.265MHz	
Pass bandwidth	±6.5kHz or more at 3dB	
Attenuation bandwidth	± 32kHz or less at 40dB	
Ripple	1.5dB or less	
Loss	3dB or less	
Guaranteed attenuation	60dB or more within ±1MHz	
Oddiantood on	Spurious level : 40dB or more	
input and output impedance	1.4kΩ ± 10%/1pF ± 10%	
HIDOL GILO OR POL HILIDOGO.		

Table 4 MCF (L71-0248-05) (RF unit L4 TS-711, L16 TS-811)

IF UNIT (X48-1400-XX)

Reception system

The reception system is generally divided into SSB/CW and FM modes.

1) SSB/CW mode

The RIF signal (30.265MHz) from the RF unit (X44-1620-11: TS-711, X45-1650-XX: TS-811) is mixed with the 40.96MHz output from Q2 at Q34: 3SK73(Y) and is converted to the 10.695MHz second IF. Then, this signal is amplified via the noise blanker gate circuit and SSB filter L12 by IF amplifiers Q20-22: 3SK73(GR) (to which AGC is applied), and is then mixed with the carrier OSC signal by product detector (D10-13: 1N60) to obtain a demodulated audio output.

For AGC, the IF output of Q22 is taken through AGC buffer Q24: 2SC2458(Y). Q23 controls the AGC voltage. Part of the output of AGC buffer Q24 is connected as the SSB squelch release signal with SSB squelch mixer Q40: 2SC2668(Y,O) via Q39.

Q25 is the AGC time constant selection circuit. Q26 and Q27 from the S-meter amplifier.

2) FM mode

The RIF is input to mixer Q36: 2SC2668(Y) via gate-grounded amplifier Q35: 2SK125. For the local OSC signal, 30.72MHz is obtained by multiplying the PLL 10.24MHz reference by 3-times (Q38). There, the RIF signal is converted to the 455kHz second IF. This output is amplified via ceramic filter L31 in the IF amplifiers, consisting of Q44: TA7302P, Q45: 2SC2668(Y) and Q46: μ PC577H, and is then demodulated by ceramic discriminator L34: CFY455S.

The demodulated signal is filter separated between the AF pre-amplifier Q49 : 2SC2458(Y) and the squeich noise amplifier Q53 : 2SC2458(Y), Q54 : 2SC3113(B). The "busy" lamp is controlled by the squeich circuit and the center detection circuit Q47 : $\mu\text{PC4558C}$. To supress ignition noise, a "killer" circuit using Q62 is added and is controlled by Q61.

3) Noise blanker

Q41 noise amplifier the second IF output, obtained by mixing the 30.265MHz first IF at Q36. It is switched by Q43. Q37 is a switching circuit to blank PLL reset noise which would otherwise occurs every 20kHz.

CIRCUIT DESCRIPTION

4) SSB squelch

This acts as a noise squelch. The SSB squelch release signal, taken from AGC buffer Q24, is input to buffer Q39 through squelch sensitivity pot VR6. This output is mixed with 10.24MHz in the SSB squelch mixer Q40 and converted to 455kHz. This signal is then input to the FM IF amplifier. Thereafter, the FM squelch circuit is used to provide SSB squelch.

In the SSB mode, Q56 in the squelch circuit operates to set the attack and slow release time constants.

• Transmission system

1) SSB and CW mode

The audio signal from the AF unit is amplified in the microphone amplifier Q28—30 : 2SC2458C and sent to the balanced modulator, D16 : ND487C1-3R. In CW mode, the modulator is unbalanced by DC, and this carrier signal output from the modulator is used. The double sideband output is filtered by SSB X'tal filter L12 amplified by FET Q5 : 3SK73(GR), and mixed with the 40.96MHz output from Q2 in balanced mixer Q6, Q7 : 2SK161(GR) for conversion to the T1F (Transmit IF) signal at 30.265 MHz. Then, the T1F signal is amplified by FET Q8 : 3SK73(GR) and sent to the RF unit. In CW mode, keying controlled by Q32 and Q8 gate biases using —6V and Q13 switching.

2) FM mode

The carrier signal output from the unbalanced SSB modulator is used. Different from the SSB/CW mode is that the local OSC signal used in FM for balanced mixers Q6, Q7 is supplied by X'tal OSC L4 (13.657MHz), which in FM mode operates at 13.653MHz, pulled by varicap D3. This OSC output is tripled 40.96MHz. In the FM mode, ±5kHz frequency deviation is obtained after tripling the direct modulated X'tal OSC output.

3) Power control

Fig. 3 shows the power control circuit configuration. The final output is detected, and the ALC (Automatic Level Control) voltage is controlled by Q4 in the Display unit (X54-1820-11). The ALC voltage is applied to the second gates of FETs Q5 and Q8, by which the TIF level is adjusted and then APC (Automatic Power Control) is applied. In addition, the power control, in which two pots are used. controls the G2 voltage of generator buffer Q32, to counter excessive ALC at low power.

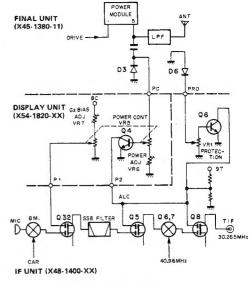
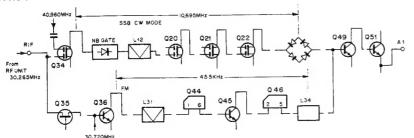


Fig. 3 Power control cinfiguration (TS-711)

Item	Symbol	Condition	Max.	Şt.	Min.	Unit
Foward Voltage (DC)	VF1	1F=50mA			0.7	٧
Foward Voltage (DC)	VF2	IF=1.0mA		0.2	0.3	V
Foward Voltage Difference	∆VF2		1		0.02	٧
Terminal Capacitance	Ct	VR=0	1	0.9	1.2	pF
Terminal Capacitance Difference	ΔCt	f=1.0MHz			0.2	pF

Table 5 ND487C1-3R Electric characteristic (IF unit D16)

RX SECTION



TX SECTION

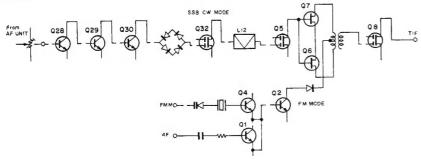


Fig. 2 IF unit block diagram

AF UNIT (X49-1180-00)

Microphone amplifier

The signal from the microphone is amplified by Q1: 2SC2459(GR), which is common to both FM and SSB modes. In FM mode, the signal is subject to 6dB/oct preemphasis by Q4 (1/2): NJM4558S and is amplified by OP amplifier Q4 (2/2). Then, it is high-cut by active LPF (Low Pass Filter) Q9 for -24dB/oct via amplitude limiter D8: MC911 and applied as modulation to the X'tal OSC in the IF unit.

In the SSB mode, the output from amplifier Q1 is impedance-converted by emitter-follower Q3: 2SC2458(Y) and provided as modulation for the balanced modulator in the IF unit through the microphone gain control on the front panel. The input signal to pin AN1 of accessory terminal ACC2, in the SSB/CW mode is mixed with the output of microphone amplifier Q3 and is then input to the microphone gain control. In the FM mode, it is input to amplifier Q4, but not through the pre-emphassis circuit. Further, Q2 is controlled by the signal input to ACC2 pin MM to turn OFF amplifier Q1 for microphone muting.

Processor

When the processor SW is ON, the processor circuit consisting of Q5, Q6 and Q7 is connected through transistor switch Q8. Q5 is an amplifier circuit with ALC. The NFB (Negative Feedback) signal from Q5 pin 3 is amplified by Q7, detected by D5 and input for ALC at pin 6. Then, the input is controlled by ALC output pin 5.

Q6, an FET switch, adjusts the SSB level to that which has been previously adjusted in the FM mode.

Other circuits

Q11 is the AF PA, Transistor Q10 is an AF amplifier through which the signal is supplied to ACC2. Q12 is the CW side-tone OSC circuit. Q13–Q16 forms the CW semi-break-in circuit

FINAL UNIT (X45-1380-11): TS-711, (X45-1390-XX): TS-811

The drive signal from the RF unit is amplified up to 25W by power hybrid Q1: M57727 (TS-711), Q2: M57745 (TS-811). It is then supplied to the antenna through the ANT switch and the LPF for removal of harmonic component content.

In addition, ALC detection, RF meter, reflected Power detection and fan temperature detection circuits are provided. The RF meter circuit is a peak holding circuit in which voltage doubler detection is used. The final PA hybrid is protected in two ways. Reflected power (VSWR) is detected from the antenna circuit and lowers the drive voltage by control of the ALC reference voltage to prevent damage to the final PA hybrid for the second protection circuit, thermistor TH1 detects the Final unit temperature to control the fan and prevent abnormal heating in the Final unit PA.

AVR UNIT (X43-1490-11)

The AVR (Automatic Voltage Regulator) unit consists of the rectifier and filter section and the AVR circuit section. The AVR circuit section has 13.8V, 8V and 9V AVR circuits and a temperature protection circuit. There is also a fan drive circuit.

The 13.8V AVR circuit consists of Q1-Q4 and pass transistor, Q5 : 2SD717. Transistor Q1, which controls Q5 emitter, supplies power (pin BB) which is separately rectified and filtered.

The fan is switched by comparator Q10 (1/2) and Q11 after heat detection by thermistor TH1 in the Final unit. The temperature protection circuit functions to stop transmission if the transformer heats abnormally due to excessive continuous transmission, etc. during AC operation. The detection circuit, like the fan, turns OFF the AVR 9T (9V, transmit) output.

PLL UNIT (X50-1990-XX)

The PLL unit has a double loop configuration an ouput in 10Hz steps and uses a 10.24MHz ·TCXO (Temperature Compensates Crystal Oscillator) (±3ppm) as the reference OSC. 10Hz step operation is achieved by dividing the output of the 2kHz comparison PLL (loop B) by a 1/200 divider. Digital tuning in 10Hz steps is obtained by mixing that division signal with the output of the 20kHz comparison PLL (loop A). In addition, the carrier OSC, which is located in the PLL unit, is configures to an IF shift.

Loop B is a mixing type PLL. The VCO output operates from 64–68MHz (028 : 25K192A (GR)*N) in loop B and, is mixed in 031 : SN16931P with a 51.2MHz signal This infection signal is derived by multiplying 10.24MHz 5 times in 032 : 25C2668(Y,O) via buffer amplifier 029 : 25C2668(Y) and then converting to 12.8–16.8MHz.

CIRCUIT DESCRIPTION

Then, the resultant signal is amplified in Q30: TA7302 and divided at a frequency division coefficient of from 6400—8400 so that a 2kHz output is obtained. Further, 10.24 MHz is also divided by 1/10 at Q36 and again divided by 1/5, and the resultant signal is phase compared with the 2kHz reference signal at Q21: MC145155P*K.

The PD (Phase Detector) output is converted to a DC Correction Voltage by a 3 transistor stage LPF (Q25–27 2SC2459(BL)) to control the VCO (Q28).

Additionally, part of the 64-68MHz VCO output which passed through buffer amplifier Q29 is subject to 1/2000 division by divider IC Q23: M5449L for 1/1000 division. and Q22: SN74LS90N for 1/2 division through buffer Q24: 2SC260(Y,O). The output of Q22 therefore becomes 320-340kHz at a 10kHz step rate. This output and the output of the carrier OSC are input to mixer Q6 : SN16913P. A 11.025MHz output is taken through a ceramic filter and a buffer Q5 : 2SC2668(Y). Then, this 11.025MHz output is mixed at Q4: SN16913P with a 20.48MHz signal which is obtained by multiplying 10.24 MHz by two at Q40 : 2SC2668(Y) so that an output of 31.505MHz is obtained. Then this 31.505MHz output is input to mixer Q3: SN16913P as the loop A local OSC signal. Loop A is a dual modulus type PLL with a 20kHz comparison frequency. Prescaler Q20: µPB555 operates at either a 1/16 or 1/17 division ratio. The VCO output 113.735-115.735MHz TS-711E, 113.735-117.735MHz TS-711A (Q10 : 2SK129A(GR) N) in loop A is separated into the HET (Heterodyne) output and the input to mixer Q3: SN16913P through buffer Q11: 2SC2668(Y). Mixer Q3 output (80-90MHz) is amplified in a 2 transistor stage amplifier (Q17, Q18: 2SC2668(Y)) through a 80-95 MHz BPF and is input to prescaler Q20.

The prescaler, connected with PLL IC Q19, forms a swallow counter to divide this input at a frequency division coefficent NA = 4112–4212 (TS-711E), NA = 4112–4312 (TS-711A) to 20kHz. This signal is phasecompared with the 20kHz reference signal obtained by dividing 10.24MHz by two, and 1/256 division of 5.12MHz. The PD output is DC converted by a 3 transistor LPF stage (Q12, 13, 14) to control the VCO (Q10), HET output is obtained by amplifying the VCO output (Q10) by transistor Q1: 2SC2668(Y).

Comparison frequency derivation:

Loop A

The TCXO 10.24MHz output is amplified by two transistor stages (Q34, 35 : 2SC2458(Y)) via buffers (Q33, 38 : 2SC2458(Y)), is divided by Q36/2 to 5.12MHz, which in turn is input to PLL IC Q19. This input is divided 1/256 by the divider contained inside Q19 to 20kHz, which is the comparison frequency.

• Loop

The 5.12MHz output in loop A is further divided 1/5 by divider Q36/2 to 1.024MHz. This signal is then input to PLL IC Q21 and is divided 1/512 by the divider contained inside Q21 to 2kHz, which is the comparison signal,

For unlock detection, the output of PLL IC Q19 pin 9 in loop A is used. The power supply to buffer Q1 is switched by transistors Q15 and Q16.

The carrier X'tal OSC is switched by diode switches D4 and D5. The bias voltage for D4 is applied from the 8C (8V DC common supply) line, and is independent of the mode. However, in the LSB mode, D4 and D5 can be selected by the ratios of R37/R38 and R40/R39.

Item	Rating
Center frequency of 3dB bandwidth	11.025MHz ± 50kHz
3dB attenuation bandwidth	Within 150 ± 40kHz
20dB attenuation bandwidth	380kHz or less
Insertion loss $20 - \log \left(\frac{E1}{2 \cdot E2}\right)$	8dB or less
Spurious (Within 9-12MHz)	38dB or more
Input and output impedance	330Ω

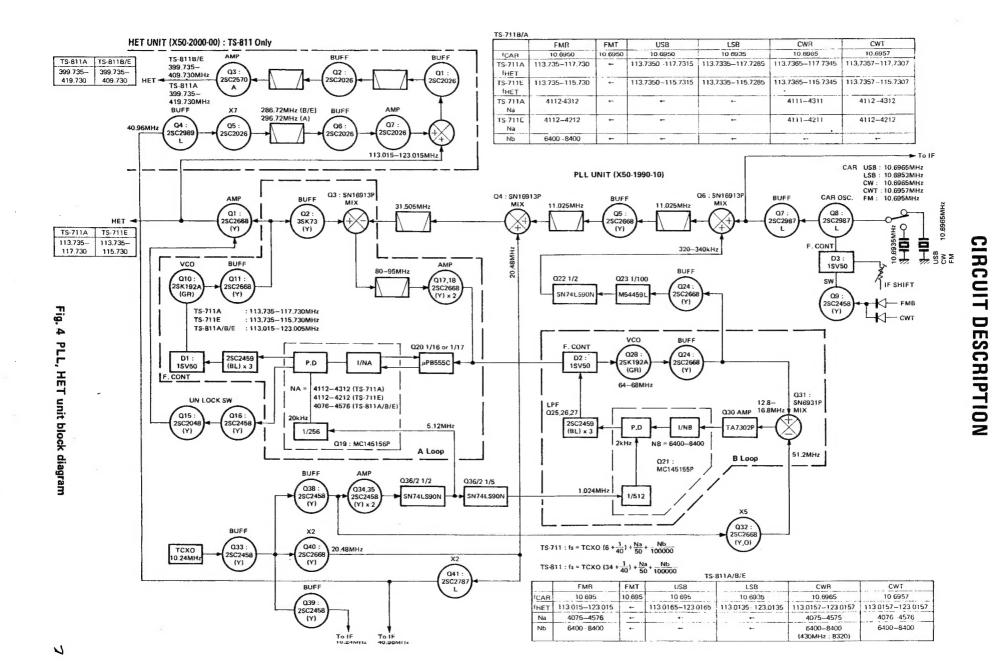
Table 6 Ceramic filter (L72-0346-05) (PLL unit L8, 10)

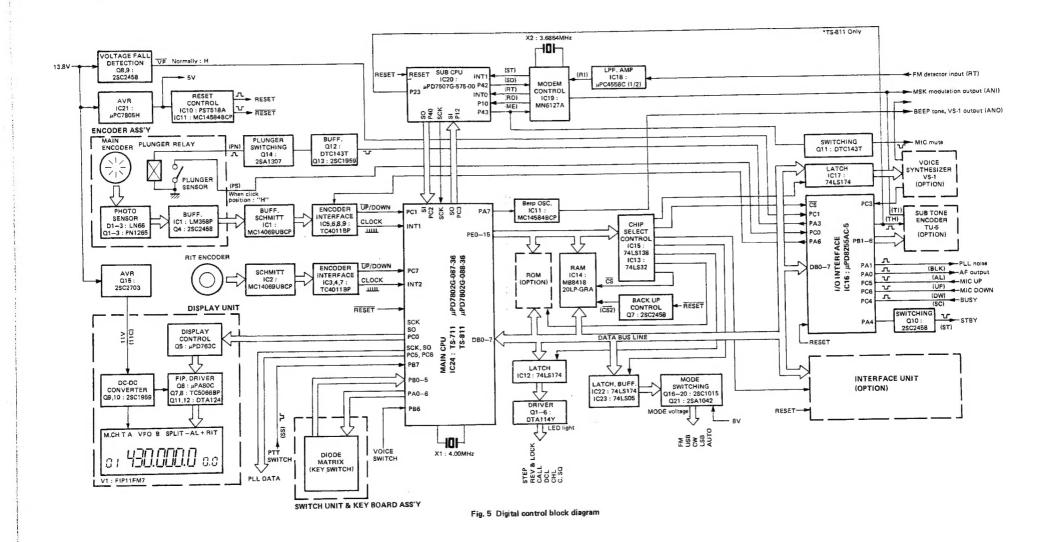
HET UNIT

(X50-2000-00) : TS-811 M,X,T,W only (X50-2010-10) : TS-811 K type only

The HET unit gives the HET output by mixing the PLL VCO output and the local OSC signal, which is obtained by a 7 times multiplication of the 40.96MHz local OSC from the PLL unit. 40.96MHz from the PLL unit is amplified up to 0.5V (rms) by amplifier Q4. To remove unwanted harmonic components, it is low pass filtered by amplifier Q7 through a Hi-Q tuning circuit (stage Q6) to become the local OSC signal for HET section.

This signal is mixed with the PLL signal (113.015–123.015 MHz) in the Schottky barrier DBM (Double Balanced) diode mixer: ND-487 and converted to the actual HET signal of from 399.735–409.735MHz (TS-811B/E), 399.735–419.730MHz (TS-811A). After passing a 2-stage bandpass amplifier with small helical coils to obtain the necessary band-width, it is amplified up to the HET signal level by broad band amplifier Q3.





8

TS-711

CIRCUIT DESCRIPTION

CONTROL UNIT (X53-1410-XX)

Basic configuration

Fig. 5 shows the block diagram of the digital control section. The microprocessor, which has an 8-bit (ROM, 6-kbyte) main CPU IC24 : µPD7802G-087-36 (TS-711), μPD7802G-088-36 (TS-811) and a 4-bit (ROM, 2-kbyte) sub CPU IC20 : µPD7507G-575-00, uses a CMOS RAM IC14 : MB847C-20LP-GRA with a capacity of 8 bits \times 2kbytes as the external memory IC, the I/O icterface IC IC16: µPD8255AC-5 for I/O port extension and three 6-bit D-flip-flop ICs IC12, 17, 22: 74LS174. In addition, it is provided with 24 pin IC socket for the external ROM for optional personal computer interface.

These ICs, connected in parallel with the data bus in the main CPU, exchange data with the main CPU synchronizes by timing signals WR or RD from the main CPU, or the CS signal from IC15. IC15, a 3 to 8 bit line decoder decodes inputs to address lines PE13-15 in the main CPU to generate the chip select signal (CS). In addition, IC13 takes an OR logic between signals $\overline{\text{CS}}$ and $\overline{\text{WR}}$ to supply the clock pulse to IC12, IC 17 and IC22, all of which are used

The main CPU controls the frequency, mode, offset, tone, display, memory, dial click mechanism, DCL system, voice synthesis, etc. and accepts interface with the sub CPU or an external personal computer.

The sub CPU, (common to the TM-211, -411, TR-2600. and TR-3600) interfaces with the main CPU or the MODEM, IC IC19, to handle digital signal code conversion and control tone ON/OFF and other such operation.

Pin No.	Name	In/Out	Function	Logic	Pin No.	Name	in/Out	Function	Logic
1	PA3	0	Output for plunger switching	7	21	PB3	0	Sub-tone frequency data output	
	PA2	0	Unused (NC)					(T3)	
2	PAZ		Onused (14C)		22	P84	0	Sub-tone frequency data output	
	PA1	0	PLL noise blanking puise			i		(T4)	
3	PAI		output (BLK)		23	PB5	1 0	Sub-tone frequency data output	
4	PAO	0	AF output mute (AL)				-	(T5)	
5	80	TT	Read strobe input	7	24	PB6	0	Sub-tone frequency data output	
-6	CS		Chip select input					(T6)	
7	GND	1	GND .	1	25	P87	0	Unused (NC) : only in area T,W	
8	A1	1	Address bus (A1)]	Ī	ì	for TS-711/811, 1750Hz con-	
9	AO	1 1	Address bus (A0)	<u> </u>		1		tinuous tone control output (TH)	-
10	PC7	11	Unused (L)	1	26	Vcc		Power supply pin (+5V)	-
11	PC6		MIC DOWN switch input (UP)	75	27	D7	1 1/0	Data bus (D7)	-
12	PC5	1 1	MIC UP switch input (DOWN)		28	D6	1/0	Data bus (D6)	_
13	PC4	1	Busy Input (SC)	1	29	D5	1/0	{ Data bus (D5)	1
14	PCO	1	Plunger sensor input (PS) :		30	1 04	1/0	Data bus (D4)	-
14	1	1	"H" at click	1	31	D3	1/0	Data bus (D3)	
	500		Low supply voltage detection	1	32	D2	1/0	Data bus (D2)	1
15	PC1	1 ,	input: "L" at less than about	125	- 33	; D1	1/0	Data bus (D1)	-
			9.5V	-	34	DO	1/0	Data bus (D0)	
		-	Unused (L)	1	35	RESET	1 1	Reset input	1_
16	PC2		Voice busy input (BY)		36	I WR	1	Write strope input	17
17	PC3	1	Unused (NC)	1	37	PA7	0	Unused (NC)	1
18	PBO	0	Sub-tone frequency data output	1	38	PA6	0	Encoder pulse select output	1 -
19	PB1	0	(T1)			1		"H" at click	
	700	10	Sub-tone frequency data output	†	39	PA5	0	Unused (NC)	1-
20	P82		(T2)		40	PA4	0	Standby (transmission) output : "H" in transmission	7

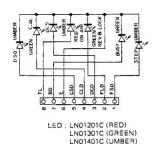
Table 7 Function of µPD8255AC-5 (Control unit IC16)

TS-711/811

CIRCUIT DESCRIPTION

· Key switch section

The key switches on the front panel are arranged in a diode matrix (Fig. 6) and their signals are input to the main CPU in a key scan system. The switches, LEDs, RIT encoder, etc. on the front panel are electrically connected in the switch unit and sent to the control unit over simple wiring.



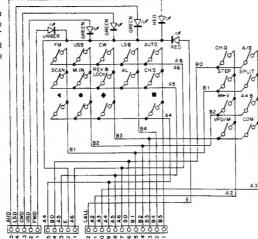
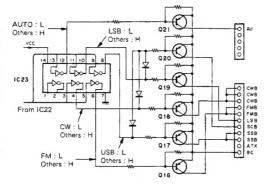


Fig. 6 Keyboard ass'y schematic diagram

Display/mode control section

The fluorescent display section, a using custom IC: FIP11FM7, serially transfers the data corresponding to the display contents from the main CPU. The data transferred is 79 bits at power ON and 71 bits whenever the display contents change. The data is output by use of 3 pins SCK (clock), SO (data) and PCO (enable) from the main CPU when pin PCO is "L", After emission of all data bits, pin PCO is made "H". The "CALL", "STEP", "REV & LOCK", "DCL", "CHL", "C" and "SQ" LEDs each light by switching the latch output (active "L") of IC12: 74LS174 via digital transistors Q1—Q6. Mode LED's light with the voltage for that mode. The voltage for each mode is produced by switching 8V by Q16—21 with the latch output (active "H") of IC22: 74LS174 configured as an open-collector output by IC23: 74LS015.



Normally Tr Q16-21 (base) voltage level is "H" and collector voltage level is "L", When MODE switch is turned to FM position, Q16 base is turned low to high level. Then, Tr Q16 is turned ON (collector is high level).

Fig. 7 MODE switching circuit

CIRCUIT DESCRIPTION

DCS system control section

The processing of the digital control signal used in the DCS system is performed by the sub CPU (IC20 : μ PD75076-575-00), the MODEM process IC (IC19 : MN6127A) and IC18 : μ PC4558C.

In transmission, first, the data (digital code, call sign, idle channel) for the control signal is transferred to the sub CPU from the main CPU. In the sub CPU, logic transforms that data to NRZ (None Return to Zero) code, which is then output to IC19. It is subject to MSK (Minimum Shift Keying) modulation at IC19. Subsequently, that output is input to Q4 in the AF unit via pin ANI and is applied as

FM modulation. In reception, the signal which was subject to FM detection at discriminator L34 in the IF unit is input to IC18 from pin RT. IC18, an active filter, cuts off the high frequency component of this signal and also amplifies it up to the proper input level for IC19, and it is then output to IC19.

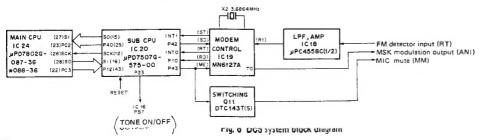
At IC19, it is subject to MSK demodulation to NRZ code and is output to the sub CPU, in which it receives the reverse logic operation to that in transmission and is transferred to the main CPU. For the functions of IC pins used in this transfer, see Fig. 8 and Table 8, 9.

Pin No.	Name	In/Out	Function	Logic	Pin No.	Name	In/Out	Function	Logic
-1	NC				27	NC			
2	P73		Unused (L)		28	P42	0	Transmission data output	
3	RESET		Reset input			l	i	to IC19	1
4	NC NC				29	NC	1		
5	CL1		CR connection pin for clock		30	P43	0	IC19 enable output	
			pulse OSC		31	Vss		GND	
6	NC				32	X1		Unused (NC)	T
7	VOD	1 1	Power supply pin (+5V)		33	VDD		Unused (NC)	
8	NC	1			34	X2		Unused (L)	1
9	CL2		CR connection pin for clock		35	, NC	1		1
			pulse OSC		36	P20	0	Unused (NC)	
10	INT1	1	Clock pulse input for data		37	P21	0	Unused (NC)	171
			transmission to IC19 (ST)	_ L	38	P22	0	Unused (NC)	
11	INTO	1	Clock pulse input for data		39	P23			1
			reception from IC19 (RT)	1	40	NC			1
12	SCK	0	Serial clock pulse output		41	P10	11	Reception data input from IC19	171
		1	(for main CPU)	احد	42	P11	1 1	Unused (H)	
13	NC				43	P12	1	Communication request input	-
14	NC				1	ļ		from main CPU (IC20)	- '
15	so	0	Serial data output (for main CPU)		44	P13	1	88.5Hz tone control input	
16	SI	ı	Serial data input (for main CPU)	-	1			(connected to P23)	1
17	P60	1	Unused (L)	-	45	NC			i
18	P61	1	Unused (L)	İ	46	P30	0	Unused (NC)	
19	P62	- 1	Unused (L)	1	47	P31	0	Unused (NC)	
20	P63	1	Unused (L)	į	48	P32	0	Unused (NC)	
21	P50	0	Unused (NC)		49	P33	0	Unused (NC)	
22	P51	0	Unused (NC)		50	P70	1	Setting of interface function	
23	P52	0	Unused (NC)			!		for IC19, IC20 and IC24 (H)	
24	P53	0	Unused (NC)		51	P71	1	Setting of interface function	
25	P40	0	Communication request output			v.		for IC19, IC20 and IC24 (L)	
		į	to main CPU (IC20)	1	52	P72	1	Setting of interface function	
26	P41	0	Unused (NC)		1			for IC19, IC20 and IC24 (H)	1

Table 8 Function of µPD7507G-575-00 (Control unit IC20)

Pin No.	Name	In/Out	Function	Logic	Pin No.	Name	In/Out	Function	Logic
1	PE15	0	Address output for chip select		30	X2		Ceramic OSC connection pin	
			(IC15), address bus		31	X1		Ceramic OSC connection pin	
2	0 OUT				32	Vss		GND	
3	D87	1/0	Data bus (D7)		33	PAO	0	Key matrix output	7
4	DB6	1/0	Data bus (D6)		34	PA1	0	Key matrix output (A1)	7
5	DB5	1/0	Data bus (D5)		35	PA2	0	Key matrix output (A2)	
6	084	1/0	Data bus (D4)		36	PA3	0	Key matrix output (A3)	7
7	DB3	1/0	Data bus (D3)		37	PA4	0	Key matrix output (A4)	
8	DB2	: 1/0	Data bus (D2)		38	PA5	. 0	Key matrix output (A5)	
9	081	1/0	! Data bus (D1)		39	PA6	0	· Key matrix output (Ã6)	
10	DBO	1/0	Data bus (D0)		40	PA7		Beep OSC control signal output	
11	INT2	1	RIT clock pulse		41	P80	1	Key matrix input (A0)	ַיַרַי
12	INT1	t	Main encoder clock pulse	77	42	PB1	ı	Key matrix input (A1)	
13	INTO	ı	Interruption input for interface		43	PB2	1	Key matrix input (A2)	
			with personal computer (RDY)	7.7	44	PB3	1 1	Key matrix input (A3)	17
14	WAIT	2	Unused (connected to Vcc)		45	PB4	1	Key matrix input (A4)	
15	M1	-	Unused (NC)		46	PB5	I	Key matrix input (A5)	
16	WR	. 0	Write strobe output for IC14,		47	PB6	ī	Key matrix input (A6)	7
.0	1		IC16 and IC13 (WR)		48	PB7	1	Standby (P.T.T.) input (SS)	17
17	RD	0	Read strobe output for IC14		49	PEO	0	1	
''	110	1	and IC16 (RD)		50	PET	0	7.	
18	PC7	1 1	BIT UP/DOWN	l (51	PE2	0	7.	
19	PC6	0	2nd PLL (B loop) data latch (EB)		52	PE3	0		
20	PC5	0	1st PLL (A loop) data latch (EA)		53	PE4	, 0	Address output for	
21	PC4	10	Unused (NC)		54	PE5	0	external RAM (IC14)	
22	PC3	0	Communication request output		55	PE6	; 0	and external ROM	
22	1 00		to sub CPU (IC20)	17	56	PE7	0	(option)	
23	PC2	1	Communication request input	-	57	PE8	0	Address	
20	102	1	from sub CPU (IC20)		- 58	PE9	0	bus	
24	PC1		Main encoder UP/DOWN		59	PE 10	0	3 1	
25	PCO	0	Enable output for display LSI		60	PE11	0	- J	
20	1		(Q5 in display unit) (ED)	. 1	61	PE12	. 0	Unused (NC)	
26	SCK	1/0	Serial clock pulse I/O (Output for		62	; PE13	0	Address output for chip select	:
20	JOK	1,70	PLL, output for display IC,	7		i		(IC15)	,
		1	input for sub CPUI	_	63	PE14	0	-	1
27	SI	TT	Serial data input (for sub CPU)		_	1			1
28	i so	0	Serial data input (for sub CPU,		64	Vec	_	Power supply pin (+ 5V)	1
28	30		Pt_L and display IC)	1	-				İ
29	RESET	-	Reset pulse input	17 5	-1	1			î

Table 9 Function of μPD7802G-087-36 (Control unit IC24) TS-711 Function of μPD7802G-088-36 (Control unit IC24) TS-811



CIRCUIT DESCRIPTION

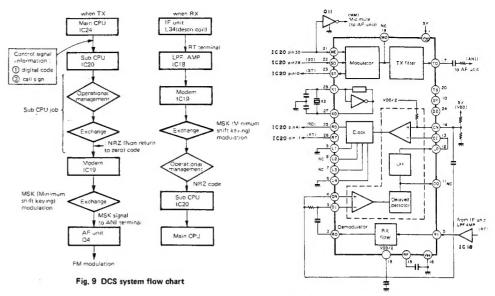
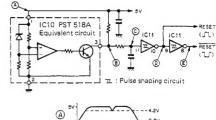


Fig. 10 Modem IC MN6127A block diagram (Control unit IC19)

Reset and backup

A custom IC (IC10: PST518A) (Fig. 11) is used to output the pre-determined reset pulse at power ON or momentary power failure. At IC10, the voltage in the 5V line is detected. When it becomes less than 4.2V, the open-collector output is turned ON. thus, "H" (RESET) and "L" (RESET) pulses of about 10msec are generated through a Schmitt trigger when resetting and applied to the reset pin of each IC. At power OFF, when Q8 and Q9 detect the supply line voltage (13.8V) is less than about 9.5V, the CPU returns the transciever to the reception mode to stop all other processes. In addition, when the voltage at the 5V line becomes less than 4.2V, Q7 (normally ON) turns OFF to establish IC14 in the standby (backup) state.



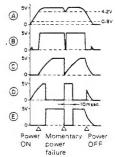


Fig. 11 Reset circuit and waveforms at respective points

TS-711/811

CIRCUIT DESCRIPTION

"Beep" tone oscillator and voice synthesis control section

For the "beep" tone output (including Morse Annunciation), its corresponding ON/OFF signal is output from the main CPU PA7 (pin 40) and is generates in oscillation circuit IC11: MC14584BCP. It is then mixed with the audio output of the voice synthesizer (VS-1) and is input to the AF unit from pin ANO.

The control output (PSO-4, SR) of the voice synthesizer unit (option VS-1) is output from IC17 latch and the control input (BY) is input to IC16 PC3.

Encoder section

Fig. 12 shows the configuration of the encoder section. The control pulse of the main dial "click" detent mechanism is as shown in Fig.13. When operating the CH.Q, CS, VFO/M, M-V, SELECT, etc., keys, the CPU performs its associated process, judges whether or not the dial is detented, and inputs the status signal of the sensor (pin PS) to 1C16 PCO (pin 14). For example, when the dial retent is activates, as when the dial is already detented when pin PS is "H", the process ends. However, when pin PS is "L", a 100msec pulse is emitted from PA3 IC16 pin 17, thereupon the plunger drive pulse (PN) is emitted through the switching operation of Q12: DTC143T(S), Q13: 2SC2459(Y) or Q14: ZSA1307(Y).

After 100msec, the sensor status is checked. If it is "H", the process ends. However, it is found not "H", the process series is repeated. If it does not become "H" after this is repeated 7 times, the CPU stops the process, judging that the plunger ;section has a malfunction.

Out of waveforms EN1, EN2 and EN3 in the encoder, waveforms EN1 and EN2 are connected to four waveforms EN1, EN2, EN1 and EN2 in IC1 : MC14069UBCP. These four waveforms are combined with their respective differentiation waveforms and multiplied 4 times in IC5 and IC6 TC4011. Output UP/DOWN and a clock pulse are generates in IC8 and IC9: TC4011 and are entered to the main CPU PC1 (pin 24) and INT1 (pin 12). In the detent mode, the Schmitt trigger differentiation waveform output of EN3 is selected in IC9 and is taked as the clock pulse. RIT encoder waveform chatter is absorbed at Schmitt trigger IC2 and waveforms E1 and E2 are combined with their inversion waveforms and differentiation waveforms. They are then multiplied 4 times at IC4 and IC7, from which signal UP/DOWN and clock pulse outputs are produced and entered to PC7 and INT2 of the main CPU.

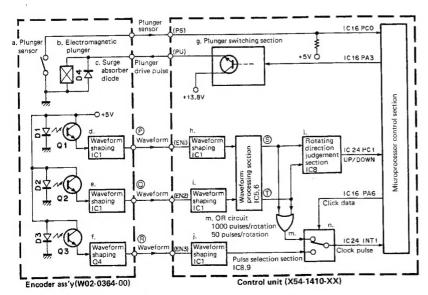


Fig. 12 Configuration of encoder processing section

CIRCUIT DESCRIPTION

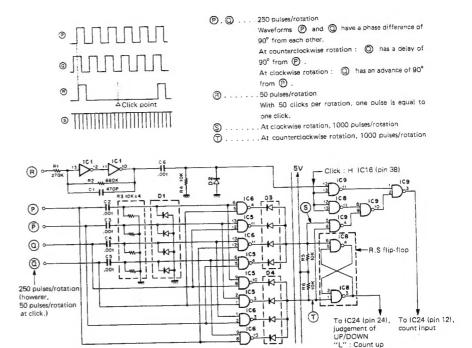


Fig. 13 Output waveform of main encoder

Other I/O sections

a, Standby (ST) output :

The P.T.T. switch ON/OFF signal (ST) from pin SS is taken in PB7 of the main CPU. In transmission, Q10 (open-collector) is thus switched with IC16 PA4 (pin 40) "H".

In auto-transmission in the DCL system, the ON/OFF control for Q10 is also generated in the main CPU to control transmission and reception along with a personal computer.

"H" : Count down

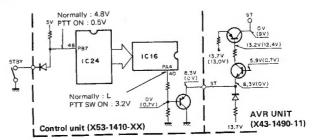


Fig. 14 STBY output circuit

b. PLL select switching noise blanking output

When the data in PLL loop A (in 20kHz steps) changes, the timing pulse (BLK) in synchronization with the data output is output from IC16 PA1 (pin 3). Q37 in the IF unit switches to momentarily mute the PLL select switching noise.

c. Busy (SC) input :

In scan mode operation, the SC signal corresponding to busy lamp status is input to IC16 PC4 (pin 13) to select between "open" or "busy".

d. Microphone UP/DOWN switch :

These are input to IC16 PC5 or PC6 after chatter filtering. (The following are for DCL system control.)

e. Microphone mute (MM) output :

This signal cuts off micropnone audio during digital signal transmission. This signal, which is output to IC19 from P43 of the sub CPU, controls Q11 (open-collector) to switch Q2 in the AF unit.

f. Audio mute (AL) output

This mutes the audio output by making IC16 PA0 "H" in code squelch operation, during retrieval of an idle channel or in memory channel check during alert operation.

Encoder ass'y (W02-0364-00)

Encoder section

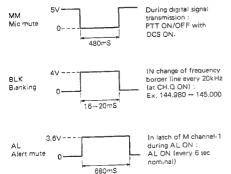
An IR (Infrared) output is taken through a 250 slit/rotation disk is detected at phototransistors Q1 and Q2. These detection signals are each waveform-shaped at comparator IC1 and emitted to pins EN1 and EN2. Then, they are adjusted by VR1 and VR2 so that they have a precise phase difference of 90° from each other with a precise duty cycle of 50%.

An IR output which is taken through 50 slit/rotation disk is detected at phototransistor Q3. The detection signal is amplified at Q4 and emitted to pin EN3. Signal EN3 is extracted without adjustment. Fig. represents each output waveform.

Detent : electromagnetic plunger section

Whenever the plunger relay is turned ON and then OFF by the Control unit control pulse (pin PN), the detent mode changes to the slew (continuous tuning) mode or vice versa. Normally, the plunger relay is OFF. In addition, the plunger sensor switch is OFF (open) at the detent mode and ON (closed) at the slew mode.

Connector 4



Connector 9

RT . . . In reception of standard modulation signal (1kHz ± 3kHz deviation, 60dBµ) → 100mVp-p (36mVrms)

ANI . In transmission of digital signal, PTT ON/OFF at DCS ON →80mVp-p.

BZ . . . In output of beep sound, M.IN pressed → 22mVp-p.

BZIn output of beep sound, M.IN pressed → 22mvp.

TOIn output of 88 5Hz tone (0 6kHz deviation) →

420mVrms

Fig. 15 Waveforms at @ and @ 1/O pins (With harness connected)

100mS 100mS Plunger drive pulse (PN) Plunger (PS) (S) 1 2 3 4 Pulse Sensor Sensor Pulse operated ON? output OFF

Fig. 16 Relationship between plunger drive pulse and sensor

CIRCUIT DESCRIPTION

DISPLAY UNIT (X54-1820-11)

Display section

When display data is transferred on its 3 lines: DD (data) CD (clock) and ED (enable) from the control unit, they are input to the display control IC Q5: μ PD763C. Q5 outputs both digit signals (T0–T11) and segment signals (Sa–Sg, I0,I1) for dynamic display lighting. (**Table 10**). The digit

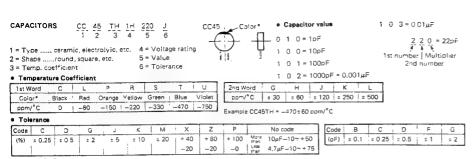
and segment signals are driven by Q7 and Q8, and by Q6, Q11 and Q12 so display tube (V1) lights, Q7, Q8, Q6 and Q11 switch about -23V and +5V. Specifically, Q12 switches about -23V and +11V, as it drives the red character segments. In addition, Q9 and Q10, which are a DC-DC converter oscillator circuit, produce negative voltages for the display tube and AGC circuits.

Pin No.	Name	In/Out	Function	Logic	Pin No.	Name	In/Out	Function	Logic
rin NO.	X2	1111/000	IFT connect pin for clock		15	10	0	Segment signal Character	
ı	^2		pulse OSC		16	11	0	Segment signal Decimal point	
2	TO	0	Digit signal RIT 10° Hz digit		17	Sa	0	Segment signal a	
3	T1	0	Digit signal RIT 101 Hz digit		18	Sb	0	Segment signal b	
4	T2	10	Unused (NC)	1	19	Sc	0	Segment signal c	
5	Т3	To	Digit signal 10° Hz digit		20	Sd	0	Segment signal d	
6	T4	0	Digit signal 10° kHz digit	1	21	Se	0	Segment signal e	
7	T5	+ 0	Digit signal 101 kHz digit	1	22	Sf	0	Segment signal f	
8	T6	0	Digit signal 103 kHz digit		23	Sg	, 0	Segment signal g	
9	T7	To	Digit signal 10° MHz digit		24	CS	1	Chip select input	
10	T8	1 0	Digit signal 10 ¹ MHz digit		25	SCK	1	Serial clock pulse input	,
11	T9	0	Digit signal 10 ³ MHz digit		26	SI	1	Serial display data input	
12	T10	0	Digit signal M.CH 10° digit	17	27	Vcc		Power supply pin (+5V)	
13	T11	10	Digit signal M.CH 10 ^s digit		28	X1	(For clock pulse OSC	
14	GND	T	GND		1				

Table 10 Function of µPD763C (Display unit Q5)

PARTS LIST TS-711A/E

PARTS LIST



١		1		_	 _
	Less	than	10	ρF	

2nd word 1st word		В	С	D	· E	F	G	н	J	, κ	٧
0	1.0	1.25	1.6	2.0	2.5	3.15	4,0	5.0	6.3	8.0	_
1	10	12.5	16	20	25	31.5	40	50	63	• во	35
2	100	125	160	200	250	315	400	500	630	800	_
3	1000	1250	1600	2000	2500	3150	4000	5000	6300	8000	_

1 = Type ceramic, electrolytic, etc. 2 = Shape round, square, etc.

3 = Dimension 4 = Temp. coefficient

5 = Voltage rating 6 = Value 7 = Tolerance.

Chip capacitors	
$(EX)_{GB}^{GB}$ \xrightarrow{GB} G	
1 2 3 4 5 6 7 /	
(Chip) (CH,RH,UJ,SL) /	
(EX) ಕ್ಷಿಸ್ ಕ್ಷಾ ಕ್ಷ್ ಕ್ಷ್ ಕ್ಷ್ ಕ್ಷಿಸ್ ಕ್ಷಾ ಕ್ಷ್ಮ್ ಕ್ಷ್ಮ್ ಕ್ಷ್ಮ್ ಕ್ಷ್ಮ್ ಕ್ಷ್ಮ್ರ್ ಕ್ಷ್ಟ್ರ್ ಕ್ಷ್ಮ್ರ್ ಕ್ಷ್ಟ್ರ್ಯ್ ಕ್ಷ್ಮ್ರ್ ್ರ್ ಕ್ಷ್ಮ್ರ್ ಕ್ಷ್ಮ್ರ್ ಕ್ಷ್ಮ್ರ್ಟ್ರ್ಯ್ ಕ್ಷ್ಮ್ರ್ಟ್ರ್ ಕ್ಷ್ಮ್ರ್ಟ್ರ್ಯ್ ಕ್ಷ್ಮ್ರ್ಟ್ಟ್ರ್ಯ್ ಕ್ಷ್ಟ್ರ್ಯ್ ಕ್ಷ್ಟ್ರ್ಯ್ಟ್ರ್ಯ್ ಕ್ಷ್ಟ್ರ್ಯ್ಟ್ರ್ನ್ ಕ್ಷ್ಟ್ರ್ಯ್ಟ್ರ್ಟ್ಟ್ರ್ಯ್ಟ್ರ್ಯ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಯ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ಟ್ರ್ಟ್ಟ್ಟ್ಟ್ಟ್ಟ್ಟ್ಟ್ಟ್ಟ್ರ್ಟ	
/EA/ 단계 (부) 단계 대기 대기 (대기 (대기 (대기 (대기 (대기 (대기 (대기 (대기 (
1 2 3 4 5 6 7	

- (Chip) (B,F) • Chip resistor (Carbon)
- Carbon resistor (Normal type)
- 1 2 3 4 5 6 7

Dimension code	L	W	Т
Empty	5.6 ± 0.5	5.0 ± 0.5	Less than 2.0
E	3.2 : 0.2	1.6 ± 0.2	Less than 1.25
F	2.0 ± 0.3	1.25 ± 0.2	Less than 1.25

Code B C D F G

Dimension

Dimension code	L	W	Т	Wattage
E	3.2 ± 0.2	1.6 ± 0.2	0.57	2B
F	2.0 ± 0.3	1.25 ± 0.2	0.45	2A

Rating wattage

Cord	W	ettage	Cord Wattage		Cord	Wattage	
2A	1	10W	2E	1	4W	3A	1W
28	1	8W	2H	1	2W	3D	2W
2C	1	6W					

Dimension	١

UNIT	TS-711A (K,M1,M2,X)	TS-711E (T,W)	TS-811A (K)	TS-811B (M,X) TS-811E (T,W)
SWITCH UNIT	X41-1580-11	X41-1580-61	X41-1580-01	X41-1580-01 (M,X) X41-1580-62 (T,W)
AVR UNIT	X43-1490-11	X43-1490-11	X43-1490-11	X43-1490-11
RF UNIT	X44-1620-11	X44-1620-01	X44-1650-11	X44-1650-01
FINAL UNIT	X45-1380-11	X45-1380-11	X45-1390-11	X45-1390-01 (M,X) X45-1390-61 (T,W)
IF UNIT	X48-1400-11	X48-1400-00	X48-1400-01	X48-1400-01
AF UNIT	X49-1180-00	X49-1180-00	X49-1180-00	X49-1180-00
PLL UNIT	X50-1990-11	X50-1990-00	X50-1990-12	X50-1990-01
HET UNIT	_	-	X50-2010-10	X50-2000-00
TONE UNIT	_	X52-1290-60	-	X52-1290-60 (T,W)
CONTROL UNIT	X53-1410-11 (K,M1) X53-1410-21 (M2,X)	X53-1410-51 (T) X53-1410-61 (W)	X53-1410-12 (K)	X53-1410-22 (M, X X53-1410-52 (T) X53-1410-62 (W)
DISPLAY UNIT	X54 1820-11	X54-1820 11	X54-1820-11	X54-1820-11

SEMICONDUCTOR (TS-711A/E)

N : New parts

* : Please note that parts are sometimes not in stock and it takes much time to delive

marks	Part No.	Item	Re- marks	Part No.	1 tem	₹e mech	Part No.
	1N60	Resistor block		\$10VB20	Tic	manu	BU4011B
			1	0.000	11.0	1	LM358P
		Photo TR		PN126S(B)	11	l NI	M5L8255AP-5
		- 11	1		11	14	M54459L
		Digital TR	1	DTA114Y(S)		1	M83713
	1SV123		N			N	MB8418-20LP-GRA
N		11			11	1.4	MC14069UBCP
					- 11		MC14584BCP
		-11				1	MC145155P*K
		TR	1	2SA1012(Y)	11		MC145156P
		11			11		MN6127A
		11			11	1	NJM78L05A
			1	2SA1115(E)	H		NJM4558S
1 !			N	2SA1307(Y)			NE555P
		11					NJM78L05A
	V06B	11			11	1	NJM4558S
1 1					- 11	N	PST518A
	1S2208	- 11		2SC2358-22-A	11	1	SN74LS05N
1		-11		2SC2458(Y)			SN74LS32N
	VD1223	11		2SC2459(BL)	11		SN74LS90N
1 1	14770014	11	Ι.				SN74LS138N
l i		11		2SC2538-22-A	11	1 1	SN74LS174N
1 1		H		2SC2668(Y)	11		SN16913P
1 1		11					TA7302P
						1 1	TC4011BP
1 1		i I			11		TC4069UBP
1 1	WITE (ZJD	11	ł l		11		TC5066BP
1 1	I NEGIDI	11	N	2SD717(O,Y)	11		
1 1		II cer				N	TMP8255AP-5
1 1		11 ""			11	1 1	µPA80C
1		11				1 1	µPB555C
1 /	211011010	H	1 1		11	1 1	µPC78M08H
1	FIP11FM7	11			11		#PC577H(E,F)
1		11	1 1		11	1	μPC1158H2
	112-102-2	[]	1 1		11	1 1	μPC4558C
		11	1		11	1	μPC7805H
		H	N		11	INI	#PD763C
			""	33K128(U,H)	11	1	μPD7507G-575-00
1.1		Power module		M67707			#PD7802G-087-36
1 1		I Cover module	1	N10//2/	11 .	IN	μPD8255AC-5
		11			11		
	Z	1N60 1S1587 1SS101 1SS133 1SV50 1SV123	1N60 1S1587 1SS101 1SS133 1SV50 1SV123 N DAP401 MA856 MC9311 MC931 MI308 MI407 ND487C1-3R U058 V068 1S2208 VD1223 MTZ6.2JA MTZ6.2JA MTZ7.5JA MTZ7.5JA MTZ9.JJB MTZ12JB LN66(R) LN01201C LN01401C FIP11FM7 112-102-2 112-03-2	1N60 1S1587 1SS101 1SS101 1SS133 1SV50 1SV123 DAP401 MA856 MC911 MC921 MC931 MI308 MI407 ND487C1-3R U058 V068 1S2208 VD1223 MTZ6.2JA MTZ6.2JA MTZ6.2JA MTZ8.2J(B,C) MTZ9.1J8 MTZ1ZJB LN66(R) LN01201C LN01301C LN01401C FIP11FM7 112-102-2 112-351-2 SDT1000F N Resistor block Photo TR N N Interpretation N Interpretation N February N Resistor block Photo TR N N Interpretation N February N February N FET LN66(R) LN01201C LN01301C LN01301C LN01301C LN01301C LN01401C FIP11FM7	1N60	TN60	TN60

ENCODER ASS'Y (W02-0364-00)

PART. NO	Re- marks	NAME & DESCRIPTION	Q'TY	REFERENCE, NO
CE04CW0J330M		ELECTRO 33 6,3V	1	(C1
LM358P LN86(R)		IC LED	1 3	IC1 D1,2,3
RD14B82C102J RD14B82C105J RD14B82C181J RD14B82C182J RD14B82C222J RD14B82C472J		RES. CARBON 1kΩ RES. CARBON 1MΩ RES. CARBON 180Ω RES. CARBON 1.8kΩ RES. CARBON 2.2kΩ RES. CARBON 4.7kΩ	2 2 3 4 1 4	R5,10 R8,13 R1,2,3 R6,7,11,12 R15 R4,9,14,16
R12-2413-05 R92-0150-05		TRIM. POT. 5kΩ SHORT JUMPER	2 2	VR1, 2
PN126\$		PHOTO TR	3	Q1, 2, 3
V06B		DIODE	1	D1
2SC2458(Y)		TR	1	Q4

IS-711A/E PARTS LIST

TC-71	4 ^	/=	CEN	IER	ΔΙ
1 8 - 7 1	14	,,	(351)	ıEn	~-

TS-711A/E			T-			DIS	TIN	CTIO	N 8	(Q	JANT	ITY				DESCRIBENCE NO
		AME & GESCHIPTION	011	1021	102			061					1			REFERENCE.NO
PART.NO	NOTE	NAME & DESCRIPTION	1		1	1	1	1	1.	_	:	1				
A01-0979-02	, N	CASE(A) UPPER	i		ij	1	1	1	1		1	1	i	1 .		
A01-0980-02	N N	CASE(B) LOWER	i i			1	1	î	- 1		1	1			1 1	
A20-2524-03	! N	FRONT PANEL		+	-	-							1	1		
ALO ESC. SE			i.	1 .	. i	. !	!		1	i	1	i	į	1	1 1	
805-0708-04		SP GRILE	1		1	1	1	1		i	1	1	1	1	: 1	
810-0668-04	N	FRONT GLASS	1 1		1	1	1	1	1	<u> </u>	-		 	-		
	 -	LAMP 14V 80MA	1		1	1	1	1	1		į	i		1	1 1	
B30-0817-15	l	METER	1		1	1	1	1	1		1		1	1		
831-0655-05	N	SPACER	a		21	2	2	2	2			-	<u> </u>		 i	
839-0407-04		MODEL NAME PLATE TS-711A	1 1		1.	1					1	1	1	1		
B40-3524-04	N	MODEL NAME PLATE TS-711E				- 1	1	1		Į.		1	1		1	
840-3525-04	N		1	1		- 1	- 1		1	1		1	ļ	1		
840-3524-04	N_	MODEL NAME PLATE TS-711A	+	-	1	1	1	1	1		_		1			
841-0134-04	N	CAUTION LABEL	1 1		i	î	1	Ĩ	1		1	1	1	1		
B42-2356-04	N	SWITCH LABEL DCS	1 3		*	-		٠ .		1	i	Į.	1	i		
842-1739-04	1	VOLTAGE INDICATING PLATE 120V			4		٠,	-	-	+	1			1	1	
842-1740-04	-	VOLTAGE INDICATING PLATE 220V	1		1	1		ļ		1	i		1	1	1	
B42-1741-04		VOLTAGE INDICATING PLATE 240V	1.		1	ŀ	1		1		1	!	İ			
842-1740-04		UNITAGE INDICATING PLATE 2200	1-	-	+			1	-	-	-	+	+	\div	1	
	-	VOLTAGE INDICATING PLATE 240V		1	1	į		1	1		1	1		i	1	
842-1741-04	N	CURRENT INDICATING PLATE 6A	1 :	1	1	1	1	1	1	1	1	į			1	l .
342-2364-04		BADGE	1 :	1	1	1		1	i				-			
843-1022-04	N				-		1	Ī	1			1	1	1	l .	i
843-1023-04	N	BADGE	1					1	1			1		i	1	l .
B43-1024-04	, N	BADGE		i	ì	- 1		1	1 1		1	i	1	1		
843-1022-04	N.	BADGE	-	1	<u> </u>	+				1	-			1	1	1
846-0410-00		WARRANTY CARD			1	1		1	1	1	į.	1	i		i	
850-4148-00	1 N	INSTRUCTION MANUAL		4	*	- 1			1	1	1	-	4		1	
850-4149-00	N	INSTRUCTION MANUAL		-	-	\rightarrow		-	1	-	+			-	-	
B50-4148-00	l N	INSTRUCTION MANUAL	i.	- 1		- !		1	1 4	· [1	i	-		1	
B30-4148-00	"		-	Ì				1 _		.1	i	1	İ	1		1
*** *** **	1	CERAMIC FOR AC 470P		2	2	2	2				+		-		+-	
C91-0496-05		CERAMIC FOR AC 0.01	1	1	1	1;	1	1 1	1	-	į.	1	-	-	1	
091-0647-05	1	CERANIC TON NO COL		i	- !				1	1	- 1	!	1	1	1	
	i i	ENCODER DISC ROTOR	!	1	1	1	1	1	. 1	L¦				-		
009-0306-04			_	1	1 .	. 1	1,	1 1	. 1	l l		1		į.	1	I .
009-0307-04				1	1	1	1		. 1	:	1	1	i	i		I
040-0627-05	N	DETECTOR MECHANISM UNIT	1	- 1	-	-		1	1	1			_i			
				1	1	1	1	1 1	. 1	i T		-	_ I		i	l .
E07-1351-05	N	13P PLUG (ACC)		1	il	1	1				1	- 1	i	- 1		1
E07-0852-05	1	VOLTAGE SELECTOR PLUG		1	1	1	i				1		1		1	
E08-0474-05	l N	4P SOCKET DC	_				1	-		1	+	_			1	
E09-0472-05	N	4P PLUG DC		1	1	1				il		1	Į	1	1	
E12-0001-15		PHONE PLUG (ACS)		1	1	1	1			2		į.	i	1		
E12-0401-15		PHONE PLUG (ACS)	_	1	1	- 4	1					+	+-		_	
E18-0351-05		13P AC SOCKET		1	1	1	1			1	1	-	İ		1	
		1P JUNCTION CONNECTOR		1	1	1	1	. 1	1	1	i		İ	1	i	1
E29-0463-05		AC CABLE (ACS)		1	1	1		1	4	-			-		<u> </u>	
E30-1643-15		AC CABLE (ACS)	. 1	T		-1	1						-	- 1	-	
E30-1644-15	I	AC CABLE (ACS)	- 1			i		1 :		1		ŀ	- 1	i	1	1
E30-1645-05	i		4.	1.	- I°	- 1	-	1:		11_				-		
E30-1647-05		AC CABLE (ACS)		1	1	1.	1	1	1	1	T	-		1	1	1
E31-3049-05	N N	CABLE WITH TERMINAL	1	1	1	1				1			1	i	i	
E31-3091-05	N	CABLE WITH TERMINAL HET		i	1	1	1			11	i		1]	1	
E31-3064-00	· N	WIRE'S KIT (ACS)		4	-	-	١	-		-	-	_	_		1	
224 200- 00			1	.			ŀ	i		-	1	-			i	
F05-2023-05		FUSE 2A	- 1	1	1		Ι.		.			- 1	1		r	
	1	FUSE 1A		-	1	1	1 1	<u>. </u>	1	1	-	-	- i-			+
F05-1023-05		TEUSE 2A	i	-	1 1	1		1		.	1			1	1	
F05-2023-05		1000		1	1	1				1						İ
F07-0858-03	N*	SHIELDING PLATE	1	1	1	1.	1 1	1	1	1						
F10-1206-04	1	SUTEFAING LPUIC														

					Ð	ISTI	NCT	ION	E.	QUAN'	YTI				
	1	NAME & DECEMPATION	011	021				1 07				L			REFERENCE.NO
PART.NO	NOTE	NAME & DESCRIPTION	1	1					1			1	-		
15-0655-04	Na	BLINDING PLATE	1						î l	- 1	1			i i	
F20-0521-04		INSULATING PLATE	j *	1 *	1 1	1 '	1	-	~	i	i	1		! 1	
•••	1				+		+-	-	5	-	_				
G01-0818-04	1 7.	COILED SPRING	5	5		4	10		-	ì		-	١.	!!	
G01-0818-04	1 - 5"	COILED SPRING	15		and a				3		i i	1	i	1 1	
G02-0505-05	1	KNOB FITTING SPRING	- 3							-		-		-	
G13-0649-04	+-	CUSHION FOR METER	2						2			-	i	1	
		CUSHION FOR PLL	1						1	1	[1	1		
G13-0642-04		PACKING FOR PANEL	1	1	1		1	1	1	_				-	
G53-0510-04	-	PACKING TON THISE	1	1.	\top			-	1			ı	-	ì	
		CARTON (INSIDE)	:1	. 1		4 20	· [1.	1.		.	1.		
H01-4573-04	N	CARTON (INSIDE)	. 2	1 .	1.0	1.0	1 .					1.		-	
H01-4574-04	N		1	1-				1!			1	j.	1	1	
H01-4621-04	N	CARTON (INSIDE)	1	1		1		1	11		1	-	1	1	
H01-4573-04	N	CARTON (INSIDE)	1	1 1					1	1	1	1_		!	
HO3-2200-04	N	CARTON (OUTSIDE) TS-711A	+-	+	+		1	1	_	-	\neg				
HQ3-2230-04	N			1	-1		-		1		1.	1			
H03-2200-04	N	CARTON (DUTSIDE) TS-711A	1	1	1.	ul	1		il			1			
H10-2596-02	N ×	PACKING FIXTURE						1	11	_	_	-			
H10-2597-02	N×	PACKING FIXTURE	1						il			-	i	1	1
H12-1315-04		BUFFER	1 2					1	il		ı	ļ	ļ		
H20-1425-03	N	PROTECTION COVER	1 1						1	-	-			+	
H25-0029-04	- 17	BAG (ACS) : 60X110	1		· [1		1	1	1	1	1			i h
H25-0105-04		BAG 150X350	1							į.	1	1	ł	,	
	-	8AG 125X250	1	1		1	1	1	1		+	-i	_		
H25-0103-04	+	3/10			1 .		ı	. 1	. !	- !	1	- 1	- 1	i	
		FOOT CASE(B)	4					4	4	- 1	- 1		1	1	1
J02-0323-05	1	FOOT CASE(B)	1		ul _	1!	1	11	1			-		-	
102-0407-04		FOOT CASE(SIDE)	4			4	4	4	4		i			1	
J02-0403-04			1 . 2	: 1	2	2	2	2	2		1	ı		1.	
J21-2573-04	1 :	FOOT HARDWARE SW GUIDE A (TACT KNOB)	5		5	5 .	- 1	Ī	5		_1				
J29-0407-04		SW GUIDE A (TACT KNOB)	+-	+	1		4	4	_					1	1
129-0407-04	į		1 1	1 .	1		1	1	1					1	1
J31-0141-04		COLLAR MIC	1 3				1	1	1	-	1	- 1			
142-0442-05	N	HOLE BUSH ACC1	1-1				î	1	1	-			\neg		
161-0404-05	\top	FASTNER FOR DC PLUG	1 2				6	6	6	- 1		-	1	1	
J61-0408-05		VINYL TIE	°	' '	3	٠,	٠,	٠,	-			- 1			
			+	_	-	-	1	1	1	-	-	_	-	-	
K01-0410-05		HANDLE CASE(B)	1					1	1			1	1	1	
K21-0768-04		MAIN KNOB	1 1				1	1	1	ĺ	- 1		1		
K23-0776-04	N N	ROUND KNOB RIT	1				1				- i -	+-		+	
K23-0710-04	+	KNOB		3			3	3	3	}	į.		ĺ	1	
		KNOB UP/DOWN	1.3				2	2	2	1			1	Í	
K27-0467-04		MAIN TUING KNOB	نل		*.l	1	1	1	1	-	-		-	4	
K29-0771-04		KNOB					3	3	3				i	i	
K29-0741-04	1	KNOB POWER	1 :				1	1	1	1	1			1	
K29-0758-04		KNOB NB	1 :	5			5	5	5		_			-	
K29-3001-04		TACT KNOB RIT.TONE	1	5	51	5	T		5			1		1	
K29-3032-04	N	I ACT KNOW	1			ŀ	4	4		l		1	4	1	
K29-3032-04	N	TACT KNOB RIT. TONE		1		-	-							-	
		TRANSCOMER	+-	i†—	1	1	1	1	1		7	T	i -		1
L01-8226-05	N	POWER TRANSFORMER		-	-	-				- 1	- 1				
		******		2	2	2	2	2	2	- 1	1	1		ŀ	
NO9-0646-04	1_	SCREW M4X4				1	1	1	1	-	-	-			1
N16-0040-46	1	SPRING WASHER .				ż	2	ż	2	1	.		- [1	
N30-2604-46		PAN HD SCREW	1		2	2	2	2	2		1	- 1		1	·
N30-3004-46		PAN HU SCREW	-	4	2	-		1			-	-+-			
N30-3010-46	-	PAN HD SCREW	1	_	_	-	1		2		1	- 1	1		
N30-3010-46		PAN HD SCREW			2	2	2	2		- 1]	1	Ī	1	
	1	FLAT HD SCREW	1	6	6	6	6	6	6	!_					
N32-2604-46		11													

PARTS LIST TS-711A/E

	_				D;	STI	VCTIC	8 N	e U	IANTI	TY				
PART.NO	NOTE	NAME & DESCRIPTION	011	021								- i		REFERENCE.NO	
32-2606-46	NO:E	FLAT HD SCREW	6	6	6	6	6	6	Ī		,			i	
32-3004-46	1	FLAT HD SCREW	5		2	2	2	2	Į.			- 1			
132-3004-46	1	FLAT HD SCREW	2	2	2	2	2	2	- 1						
133-3006-41		ROUND FLAT SCREW	4	4	4	4	4	4							
	1	ROUND FLAT SCREW	4	4	4	4	4	4				1		\	
133-3006-45 :		BIND SCREW	11	11	11	11	11	11							
135-2604-46	 	BIND SCREW	18	18	18	18		18							
135-3004-41	i		2	2	2	2	2	2				- 1	,		
N35-3008-46	1	BIND SCREW	38	38				38			1	1	- 1		
487-2605-46		TAPPING SCREW	10	10				10							
N87-3006-46	Ϊ.	TAPPING SCREW		6		6		6				į	1		
N87-3010-41 .	1 :	TAPPING SCREW	. 6	3	3	3		3		l		Į	1		
N87-4006-46.		TAPPING SCREW							_						
NB7-3006-41		TAPPING SCREW	4	4				4		l	1 1		1		
N87-4008-46		TAPPING SCREW	1	1				1		i		1			
N88-2606-46		FLAT TAPPING SCREW	2	2				2							
V88-3006-46	-	FLAT TAPPING SCREW	. 5	2	2			2		!	1	- 1	- 1		
N89-3006-45		BIND TAPPING SCREW	4	4	4	4	4	4	İ	ì	! !		1		
2000. 43	1						1				1				
SDT1000F	+	THERMISTER	1	1	1			1		1		ï			
529-2409-05	N	VOLTAGE SELECTOR SWITCH	1	1	1		1	1	1		!	i	į		
	N	SLIDE SWITCH	1 1	1				1			. !	t			
531-1415-05	N N	PUSH SWITCH	1	1				1		1				1	
\$40-2450-05	N	TACT SWICH (UP DOWN)	1	2				2	ĺ			1	1		
\$50-1406-05	1 *	KEYBOARD ASS'Y DCS	1 1	1		1 1		1	l	ļ		1	i	i	
559-0428-05	N	KEYBUARD ASS'T DCS	+				-		-	-					
		1	1	1	1	1	1	1	, I	1		i			
703-0027-15		SPEAKER	1 *	1			1 *	1 *			1	. 1	- 1		
T91-0331-05	1	MICROPHONE (M,W)	+	1 2	-			-	-			-			
T91-0335-05		MICROPHONE (T)		1		1			Į	i	1		- 1		
T91-0331-05	1	MICROPHONE (M,W)	١.	١.		1 .	1	1	1					i	
T94-0049-05	N	PLANGER	1	1	1	1	1	1			-				
	1			l .	1 .	١.	١.		i	1		1			
W02-0364-00	N	ENCODER ASS'Y	1					1		1	İ	- 1	1	Į.	
W09-0326-05		LITHIUM BATTERY	1 1	1	1 1	1	1	1			-				
WO7 0320 07	-				i								- 1	1	
X41-1580-11	N	ISWITCH UNIT	1	1	1			1	1	i		i	- 1		
X41-1580-61	N	SWITCH UNIT		1		1	1	į		<u>!</u>	1	_ !			
X41-1580-11	i N	SWITCH UNIT		1	Т			1		1	i				
X43-1490-11	N	AVR UNIT	1	1	1 1	1	1 1	1	1	i	1		-		
	N	RE UNIT	1			1	1	1	į	1	i		- 1	l	
X44-1620-11		RE UNIT	+	1	1	1	1	1			1				
X44-1620-01	N			1		1 -	1	1	1		1		- 1		
X44-1620-11	N	RF. UNIT.	1	1	1	1	1	1		1	1	1		}	
X45-1380-11	N.	FINAL UNIT	1				-	-	_	-	-				
X48-1400-11	N	IF UNIT	1 4	1 1	1 ,	1	1	1	!	1			-		
X48-1400-00	N	IF UNIT	1			1	1 *	1		1	į				
X48-1400-11	N	IF UNIT	+	1	1	100				-	1				
X49-1180-00	N	AF UNIT	1				1	1		1	ĺ	[]	- 11		
X50-1990-11	N	PLL UNIT	1	1	. 1		1		-	1	1		- 1		
X50-1990-00	N	PLL UNIT				1	1	1		-	-				
X50-1990-11	N	PLL UNIT		1			i	1	1		1	t T			
X52-1290-60	N	TONE UNIT	1	;	1	1	1		İ	1	F				
	N	CONTROL UNIT	1 1	1	1					1					
X53-1410-11		CONTROL UNIT	-		1					1	T				
X53-1410-21	N					1: 1		1		-	1		Ì		
	N	CONTROL UNIT	1	1	1 .	1 *	1	1			1	i I			
X53-1410-51															
X53-1410-51 X53-1410-61	N_	CONTROL UNIT	+	 		+	-	4	_		1				
X53-1410-51		CONTROL UNIT CONTROL UNIT DISPLAY UNIT	1	1	1	1	1	1 1							

SWITCH UNIT (X41-1580-XX) (-11: K,M1,M2,X -61: T,W)

			24.				1 T M	CITO	IN C	. Q(-		-	REFERENCE.NO
PART.NO	NOTE	NAME & DESCRIPTION			1 00	2	-						_		-	C , 1, 2, 3, 4, 7
91-0757-05		CERAMIC 0.001 SOV	:	5	5	.		- 1						1	i	C , 1, 2, 3, 4, ,
91-0757-05		CERAMIC 0.001 50V				7	- 1]								
	!		i	-								L				
06-1351-05	N	ROUND TYPE CONNECTOR 13P	1 1	1 2	1										, ,	
	IN .	MINI CONNECTOR SP		5	2 .		- 1				1	1				
40-5041-05	N =	MINI CONNECTOR SP	- 1 3	- 1	1	- 1	1		,	l			1		i	1
40-5042-05	N#	MINI CONNECTOR 8P				-+-	-			-				!		
40-5043-05	N×	MINI CONNECTOR 12P		1	1	-					ŀ			1	i	
40-0273-05		MINI CONNECTOR 2P	1 1	1	1	1				í				!		
40-0573-05		MINI CONNECTOR 5P	1 :	1	1		- 1			i				1		
	-	MINI CONNECTOR 6P		1	2				V				1		r	
40-0673-05	1 *	MINI CONNECTOR OF		٠ ا و	1 [- 1	- 1					1	1.	ļ	ļ.	
40-0873-05	*	MINI CONNECTOR 8P	- 1 -	-	1					1	i .	1	ļ.	1	į :	A Control Control
40-0973-05	=	MINI CONNECTOR 9P			1	+			-	-	-			-		
40-1373-05	1 #	MINI CONNECTOR 13P	()	1	1					1				1	i	
\$14AB3A100J		METAL FILM 10 OHM 1W	1	1	1		į									R , 3
	-					- 1		- 1				i			1	s , 3, 10, 11, 12
40-2440-15	1	PUSH SW	- 1 4	4	4	i		- 1			1		l		l	
40-2441-15	1	PUSH SW		1	1	\perp						1				
50-2402-05	1	TACT SWITCH		2	2									i		5 , 5, 6
		TACT SWITCH		5	- 1			i			1		I	1	1	S . 1. 2. 7. 8. 9
50-1412-05			1	-	4								1	1	i	S , 1, 2, 7, 9
50-1412-05		TACT SWITCH		+-	-	-	\rightarrow						-	1	_	
02-0365-05	N	ROTARY ENCODER(RIT)		1	1											
SS 133	-	DIODE	-	8	8	-	-						-			D , 1, 2, 3, 4, 5, 6,
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TS-711A/E PARTS LIST

1011 01111 1		1490-11)			DI	STIN	CTIO	N 8	Q U	ANTI	TY				
-		NAME & DESCRIPTION	011	\neg		- 1			1						REFERENCE, NO
PART.NO	NOTE	ELECTRO 10 16V	4										1		C , 8, 9, 12, 20
E04W1C100M	1	ELECTRO	1		- 1			1				- 1	- 1		C , 10
E04W1C101M	1	CLECINO	10	- 1	1	,	- 1	1	1	- 1	. !	- 1			C , 5, 7, 11, 14, 15, 17, 1
K45B1H102K	i	CERAMIC 1000P 50V							-,-,+				1		24, 25, 26
			. 2	-		.]	٠ ا	·2		1		1.			C 1 . 2
90-2004-05	N.	ELECTRO 15000 25V		, N			3814	*	1			- 1	1		C , 3, 4
90-2005-05	N	ELECTRO 1000 25V	2									-	-	-	C , 22
90-0817-05	-	ELECTRO 1000 16V	1					- 1		- 1		- 1	- 1		C . 19, 21, 23
90-0820-05		ELECTRO 470 16V	3				!			1				- 1	C , 16
	1	CERAMIC 0.01 50V	1								<u> </u>				
91-0117-05	-	CERAMIC 0.022 50V	1	2	N .				. 1				- 1		C , 13
91-1008-05		CERAMIC 0.047 SOV	1		P						1		. 1		C 6
91-0119-05	1	CERAMICS.		. 34		. "	1		i, ud			- 12			1. 1.
	1		1		_										Q , 12
TC114ES		DIGITAL TR	1 -						1 1		ļļ	- 1	- 1	1	
	1										1	- !			
08-0373-05	*	MINI CONNECTOR 3P	1	ļ		-			ļ						1
31-3063-05	+ =	INSIDE CONNECTING WIRE	1										1		
40-5044-05	N*	MINI CONNECTOR 2P	1	1. 1					1						
40-5045-05	N×	MINI CONNECTOR 6P	1	1											
	1 10 2	MINI CONNECTOR 2P	2	1		1			1		1 1	i	1	1	
40-0273-05		MINI CONNECTOR 4P	1	1	ļ	i i		i				. !	- 1		
E40-0473-05	*	MINI COMMECTOR 4	1	1	1							1			
40-0673-05	*	MINI CONNECTOR 6P	1		-	-	1		-						
40-0773-05		IMINI CUNNECTOR /P	1	1 .	l		· `	Í			1	1	- 1		
40-0973-05	*	MINI CONNECTOR 9P	1. 1			1	l					1	- 1		
			-		! .	-			-						
-20-0078-05		INSULATING PLATE	2					1	1		i		- 1		
F29-0014-05	1	INSULATING WASHER	2	1	1	1		1	1	l	1		i		
F29-0014-05	1	1430CATING ANTONO	į		1	١.	1	!			1				
		FUSE HOLDER	2				1				1				
13-0055-05			1	1		1		ĺ	1						
J19-0306-05	1	HOLDER		1 1	ľ						1				
	1		2	-	-	1-			-		1				'L , 1, 2
15-0016-05		LOW-FREQUENCY COIL	"	1	1				1	ļ					The state of the s
	i		١.		1	1		1	i	1	1				0 , 6
MTZ6.2J(A,B)		ZENER DIODE 6.2V	1 1	-	-	-	-		 	-					D 6 5
MTZ8.2J(B,C)		ZENER DIODE 8.2V	1		-	1	1		j .		1				
4120.23(0)07						1	1	-	1.	1	1	ĺ			Q , 10
WIN / FERF	l l	110	1	L	L	L									Q / 10
NJ M45585	-	1.0		1	T	T	1	1	1]	1			i	4
	1	TRIM.POT. 500 OHM	1	1	1	1	1			i		i .			VR , 1
R12-1429-05		TRENCH CO.	1 1		1				1	1	į.	F	i	1	VR , 2
R12-1428-05		TRIM.POT. 1K OHM	2		1 .	1	-	1	1	1		1			R , 16, 17
R92-0674-05	j N	RESISTOR BLOCK 10 OHM 2W	-	i			10.1		1.		i.			I	
			1	1	1			1 .	1	i i	F .	1		i	0 , 1
S10VB20	·	RESISTOR BLOCK	: 1	-	· · · ·	-	-	-	+	-	+	-	-		
	1		i -			1	-	1	1				1	l	g , 8
UPC78MO8H		ic	1		!	1	1	1	1		1			1	0 , 4
J058	1	DIODE	1		1	_	1	1	-	1	1-				1 × 1, 7
2030	+	4	900	13	1	180	12		18 ×	13 11	1.00	20			0 , 7
	.	VARISTOR	1		10		15 5	18 .	120	100	100	1. 1.	100	l .	
VD1223	.	DIODE	2		100	T.	1	122	130		K .	1	1	1	0 , 2, 3
V06B	_	101005	1 -	1	1	-	1				1	,			
		leses.	a	1	1	1	1	1	ĺ	ļ	1	I			D , 8, 9
188133	1	DIODE	1 6	. 1		1	1	1		1	1	1	1	1	
	1		+		1	+	122	-	1	1 2	1	1	N.	1	Q e 1e 5
2SA1012(Y)		TR	3	1	4. **	1	The	1 .2	di T	1 0	1 45	100	100	Į.,	9 7
25A1048(Y)	1.	TR TR	्र	10 %	10 %	潜水学		100	13%	1335	3	19.50	100	100	Q . 2, 9, 11
2SC1959(Y)	1	TR	1	1		1,550	. E.	17.00	15	100	4	1		-	
25C2458(Y)		TR	3	3		1	i		1	1	1			1	9 , 3, 4, 6
		1.15	1	1			1		1	1				j.	

	1	20-XX) (-01 : T,W -11 : K,			0.1	STIN	CTIO	N 8	Q C	ANTI	17				0.1		RENCE.NO
PART.NO	NOTE		001										-		c	, 4	
C45CH1HOR5C		CERAMIC 0.5P 50V	1	1		Į	- 1		i	-		-			č		27, 28
C45CH1H12OJ		CERAMIC 12P 50V	2				l	- 1	- 1		- 1	- 1	1	- 1	č	, 2	
C45CH1H12OJ		CERAMIC 12P 50V		1	·		-,		-		N 4	57.7	.37 2	7,777		73	38
C45CH1H080D		CERAMIC 8P 50V	1	_1,	6.3 N	44	0.8	- 11 4	- : [₩. "I		. 4		. : (1)	č		
C45CH1H150J	1 2 2	CERAMIC. 15P 50V	2	. 2	190 11	1	21.	15	5. A. [500	197	1 2 1	801	13.7	Č.		12, 23, 24, 49
C45CH1H100D		CERAMIC 10P 50V	. 4			A 40 .				-				-	C	- 1	
C45CH1H100D	1	CERAMIC 10P 50V	1 1	1		i		i						- 1	Č	, 4	
C45CH1H22OJ		CERAMIC 22P 50V	1	1	i		1	- 1	ĺ	- 1		1	1		c		14, 20, 21, 22
C45CH1H330J		CERAMIC 33P 50V	- 4	4											<u> </u>		1, 47
C45SL1H101J		CERAMIC 100P 50V	1.1	1			3 5 1	· 6.	95.4		20		100	-4			9, 36
		CERAMIC 1P 50V	. 2	11/2	134		200							44.6			4, 20
C45CH1H010C	1	CERAMIC 1P 50V	2001	1	1100	100	21.1	7 11	1 1		V 1		- 1		C		37, 41
C45CH1H010C	-	CERAMIC 2P 50V	2	2	1				i	1	- 1				C		
C45CH1H02OC	1 1	CERAMIC 3P 50V	2	2					- 1			1			C		10, 34
C45CH1H030C		CERAMIC 6P 50V	1	1	1										c	- 1	
C45CH1H060D		CERAMIC: 8P SOV	2	S		1.0				1		11.7		20	C		33, 42
C45CH1H080D		CHIP CAP. 7P 50V	1	194	3.6	"	22	1	19	" l		er, 1	100	, 11	C.		
C73ECH1H070D		CHILL CHILL	1	. 1	1 .	100									C	_ :	>4
E04W1C100M	1	ELECTRO	5	5											C		7, 29, 35, 43, 55
K73E81H102K		CHIL CHES	1	1] i				-	
05-0030-15	1		î	i	1	. 1									TC	,	1
05-0031-15		TRIMMER 10P	1	, , , ,	7.7	8.		a.,,		-			A 1				
04-0154-05		RF COAX. CONNECTOR RAPHET/DO	3	3			* '		·			. 1/2			<u>_</u>		1 4
31-0180-05	-	TUNING COIL	1	1					l i		· '		i l		ĩ.		16, 17
31-0267-05		TUNING COIL	2	2		1						1	1		-		
34-0886-05		TUNING COIL	1	1	L										L		
34-2035-05	+	TUNING COIL	1	1	11/2	1.1			3.444		111	133	10.	P	7.1		3, 5, 10
34-2038-05		TUNING COIL	3	. 3	1 .	1.	5				e-100 s		1		-		19, 21
34-0893-05		COIL 3 4T	2	2			_		-			-	-		<u>-</u>		18, 20
34-0894-05	+	CO1L 3 ST	2	2							Į.		i		Ľ	1	
34-0908-05	1	CO1L 3 9.5T	1	1			'				1		l		15	1	
40-1092-14	1	INDUCTOR 1 UH	1	1			1					-			L.		7, 8
40-1011-14	 	INDUCTOR 100 UH	. 2	2							100	h	1			1	77
	ĺ	INDUCTOR 470 UH	- 1	1	1	J. 1	100	4 - 1	1.5		Sec. 2	100	. :	1.00	100	10	24
.40-4711-13		INDUCTOR 10 UH	1	1						-		-			-		
40-1001-13	+	INDUCTOR 1 UH	1	1						i -		1	i		L	,	9
40-1091-03	N	MCF 30.265MHZ	1	1			!	ļ				l l	ļ	!	L	/	4
71-0248-05	N	HELICAL BLOCK	1			1				l	1		1		L		1
79-0642-05	N	THE TOTAL BLOCK	1	. 1	1	1							- 54				1
79-0643-05	14	HERICAL	1.1			1	1.7	: %		4 1		1.		1111			2
79-0498-15	i.	HELICAL	1 - "	1		} -	1			1		1 .	<u> </u>		L		2
79-0499-05	-	HELICAL	_		1							1	T.		ĺ		
	1		2	2	1	1	į į	1		1		1	Į .	-	D		1, 2
A856	1	DIODE	1	. "		1						1	1				
		Dei Av	1	1	777	1	-	-		1					RL	,	1
51-1420-05	1	RELAY	1.	1	1:	1							1		1		
	1		1 2	1	1.	1						1			D		9
SS133	1	DIODE	1-1	1		1	1		-				1		ō	,	8
\$\$133		DIODE	5	5		1								j	D	,	3, 4, 5, 6, 7
SV123	1	DIODE	1 ,	1 '		İ			1			1	i		1		
	1			1	1		+	-	-			1.	1		Q	,	6
SC2538-22-A	1	TR	1 2			1 .		,:	1 3	İ	.*	1.5			6		- 3x 4
SK192A(GR) *N	1	FET	1 6							1	1		1 1	1	1		
			1	1	1-	-	-	-			-		1	-	Q	,	1
SK129(Q.R)	N	FET	2				1						i	1	Q		2, 5
		FET															

PARTS LIST TS-711A/E

NALUNII	1/4	5-1380-11)		1		013	STINC	TION	8	٥U	AMIT	<u> </u>				REFERENCE.NO
	T .		DITON	011												C , 6
PART . NO	NOTE	NAME & DESCRI	500	1			1			1]				c , 2, 9
C45CH1HOR5C		CEKAMIC	50V	2		į.	- 1	1			1			İ		c , 15
C45CH14010C	1	CERANIC	50V	1 1					-		-					C , 10
C45CH1H180J	1	CERANIZO	500V	1				J.		-	. 1		18.4		: 1	lc . 31, 32
C455L2H060D		CERAMIC	500V	2	. 1	1	1	Y'	. 1		11	S			· !	c , 3, 5, 7, 8, 33
C455L2H1000		CERAMIC	500V	5										-		C , 23
C45SL24220J	<u> </u>	CEMBILLO	16V	1			- 1		1	l		i	1			C , 25
E04W1C220M		CTCCINO	16V	1		- 1	1	- 1	- 1	- 1			1		1	C , 26
E04W1C101M		ELECTING	35V	1			1							-	1	C. , 29, 30
S15E1VR47M			16V	. 5					·	41		1.		14	112 1	C 13
90-0871-05		CTCCIND	50V	1				- 1	15.0	1			1	1		C 28
90-0838-05		EFECTION NO.	16V	1					-		-	-	+	-	1	
90-0861-05	1	ELECTRO 22.				1	i	- 1				1	1		1	
	1			1	1		1	- 1			ì	i	1	1		
E04-0161-05	N	UHF RECEPTACLE		1								-	+	1	-	
29-0440-14		GND WAFER		1		1						1.	1			
31-2061-05				1 1		1 1		.]					1			
E31-3061-05	*	WIRE WITH CONNEFAN								-	-	-	+	-	-	
				1									1			
F09-0405-34	1	FAN PLATE		į 1	1	1 1							1	1		
F20-0078-05	1	INSULATING PLATE		1 1							1	+-		+	1	
F29-0014-05		INSULATING WASHER			Ţ						1	1		1		
		TOTAL TOTAL		1		1	1									·
G02-0549-04	N	SPRING FOR MOTOR	61		-	+-		-	-	-		+			1	L , 4, 6
_34-0452-05		VHF COIL 3	3T	1 3					1		1		1			1 3
L34-0823-05		VHF COIL 5	5T _	- 1 - 3		1		1	1		-	+		+	-	L , 2, 5
L34-0894-05		COIL 3	9.51		2					1				1	1	L 1
L34-0908-05	_	COIL 3	2.57				1									7
134-1019-05	1	COIL 3					1		1	-	_	-	-	+	+-	L , 8
L40-1092-14	1	INDUCTOR 1	UH				1	1			1	1				
L40-1092-16		INDUCTOR 1	UH		1	i	1					1			1	D , 2
					1	1	1		_		-				-	10 , 1
M1308		DIODE			1			1			1 .					9 1
MI407	-	DIODE		i	1 .		1				1		1			
M57727		POWER MODULE			1	1			1			4-		-	-	
	1 .			_	11		T				1	İ	i			
N14-0509-05		NUT						1			-	1			i	VR , 2
		400	OHM		1	1							-	-		IVR , 1
R12-0541-05		I R Liver Ove	OHM.		1		T			١.	1			. '		• • • • • • • • • • • • • • • • • • • •
R12-5517-05		TRIM.POT. 100	UHM													TH , 1
					1		!				-		-	+-	- i -	
SDT1000F		THERMISTER			1	-									1	
				-	1						1		1	ļ	- 1	
T42-0302-05	1	DC MOTOR			-	i		-	1_			_			-	0 , 3
1	1				1	-							1	1.		10 4 4, 5, 6, 7
188101		DIODE			4			1 ;					.	-	1	
151587		DIODE					1			1	-	-	-	-	-	9 , 2
	1			_	1			T								Q , 4
25A1012(Y)		TR			1	1							- 1	- 1		9 , 3
25A104B(Y)		TR			1					_				-		Q , 5
28C1815(Y)	1	TR		_	11				T	1						" "
250717(0.Y)	N	TR.					1	시모					- [.	
						1					1					
	1_						T	T	i	- 1			+	1	ļ	
						I	1							1	- 1	
	-				1	1		1								

: 1 INIT (X48	1-140	10-XX) (-00	1 : 1,44	111111		<u> </u>	0.1	PTIM	CTIO	v 2	QU	ANTI	Ť Y					ENGE NO
Old to the					000	001	011	3114	1	· - ī							REFER	ENCE.NO 2, 57, 90,121,190
PART.NO	NOTE	NAME	BESCRIPT	SOV	5	***	5						1	į.	ļ			1,118,185
45CH1H150J		CERAMIC	15P		3	1	3		1	l.		i	- 1	- 1	- 1		11	
45SL1H22OJ		CERAMIC	22P	50V	1 1	- 1	1	1	- 1	- 1		1						9,106,107
		CERAMIC	10P	50V	3		31		-	77.7				<. L				7, 31
45CH1H100D	-	CERAMIC	47P	50V		!	2	: 1	Y .		100		- 1	· ` ` \ ['	- 1			
C45SL1H470J	İ	CERAMIC	0.5P	50V	2	S. 3	-		:]		444	. **	, • E	.			C / 1	
C45CH1HOR5C		CERAMIC	18P	50V	1				_								C /16	
45CH1H18OJ			120P	50V	1		1	- 1		1		. !	- 1	- 1		1	C -11	
455.1H121J		CERAMIC	22P	50V	1	il	1	- 1	- 1		1				- 1	i		8,115
145CH1H2ZOJ		CERAMIC	0.5P	50V	2		2							-	7	1.	C . 12	2
C45CH1HOR5C		CERAMIC	47P	500V	1		1		()		6	230	Y	12.4			C/ / 3	37
455L2H470J		CERAMIC		50V		17.1	1			5. I	100	100	80	10	S# 1.		C . /10	
C45CH1H330J	1	CERAMIC	33P	SOV	1	1 1	1			8 2	4		4	-			C	3, 37
C45CH1H020C	1	CERAMIC :	2 P		1 2		_						- 1		- 1	- 1		3, 37
4 5 CH 1 H 3 3 0 J	-	CERAMIC	33P	50V	-	l i	1						l i	i	- 1	- 1		2
	1	CERAMIC	33P	50V	1		ī					ł						15
C45CH1H330J	1	CERAMIC	3P	50V					-		10.	1			- 1	- 1		
C45CH1H030C	-	CERAMIC	120P	50V-	1	1	2	[·]	-		17	۱. '	a .]	. 1	!	- 1	0 /	32, 65
C45CH1H121J	1	CERAMIC	5 P	50V	2	1.75	4					l- 1		. [المات		64,101,108,126
C45CH1H050C-		CERAMIC	47P	50V	- 4	-		-	-	<u> </u>	-	-		-			C /	
C455L1H470J			220P	50V	1		1				1		! i	,			C /	30, 91
C455L1H221J		CERAMIC	7P	SOV	2		5		ļ			1		- 1	1		C /	19, 24, 25, 48, 61, 74,
C45CH1H070D	1	CERAMIC	10P	50V	7	1	7					↓	-	\rightarrow			C	14
C45CH1H100D		CERAMIC		50V :	1		1	T		- 20	į.	8 .	l i				6	13
C45UJ1H020C		CERAMIC	2P	50V	1 1		1		1	ì	1.5		l - 1	1	1		· C	38, 77, 80, 82, 83, 157, 10
	1 .	CERAMIC	10P		1 6		[.]	1	1 3	1	1	3	-			_	4	72,174
C45JJ1H100D	1	ELECTRO	1	50V		+	-	-				T	T				- /1	11, 38, 77, 80, 82, 83,1
EO4W1HO10M						1	10	ł	1	1	1			i			C /	11, 30, 77, 00, 00, 00,
	1	ELECTRO	1	50V	1		10	1	Į.	ļ	1	1						63,172,174
E04W1H010M		FEECINO				1		-			+	+						87
		70700	2.2	50V	1 1		. 1			ļ	1		1			1		81,155,162,181,182,188
E O 4W1H2R2M	1	ELECTRO	4.7	25V-	1 6		6		1	ì	1	F -	1		İ	Į .		99,130,173
EO4W1E4R7M	.	ELECTRO	10	16V	1 3	3	3		1 :	_	-			-	-	-	C (1	80
E04W1C100M	1	ELECTRO		16V	1		1				1	1	1	1	1	1	c ,	79,171,183
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E04W1A470M		ELECTRO	47	100			1 1	.1	i	1	L.		1	L	<u> </u>			31
		ELECTRO	220			1	1	-						. :	12	1	1 .	70
EO4W1A221M	-	CERAMIC	330P.	50V		i	1			1	Ť	1				1	C /1	4, 5, 9, 12, 42, 94,1
K4581H331K	l.	CERAMIC	· 470P	50V			1 8					1 -			l		C .	4, 3, 7, 22, 42,
K4581H471K		CERAMIC	1000P	50V		B			+	+	+	_	_			1		140
K4581H102K	_	CERMALO			l l		١.	.	1		1	1	1	1	1	1		70, 87
	i		330P	50V		2	1 3	2	1	1		1		1	i	1	0 /	47,110,153,177
CK 4581H331K	1	CERAMIC	470P	50V	- 1 -	4	-			+	+		+		+	+	TC /	47,110,145,153,177
CK4581H471K		CERAMIC	470P	50V				5	1		1			!		1	C	6, 23, 45, 98, 136, 145, 1
CK 4581H471K		CERAMIC	1000P	50V	1 1	2	-	1.	1	1	1		1.	1	1		1	eco 449-184-189-193
CK 4581H102K		CERAMIC .	1000P	201	1 -	-1	1			1 _				ļ	+	+-	c ,	6, 23, 45, 98,136,156,1
CK 4)01111011					-		1 1	1		T	_		1	1	1	1	1 1	168, 186, 189, 193
		CERAMIC	1000P	50V		- 1	1 -	-	1		1	1	1	1	1	1		
CK4581H102K	- 1							+	1	1	1	- 1	1					29, 43, 85, 89,138,144
	- 1	CERAMIC	0.01	50V		1					-	-	1	1	1	į .	C	
CK45F1H103Z	-	CERAMIC	0.01	50V		6	1		1.	1		1	1		ľ	1 :		175
CK 45 F 1 H 1 O 3 Z		MYLAR	33.00P	50V .		1.		1 .	400					1.	1.0	1 .		176
CQ92M1H332K	- 1		0.01	50V		1		1		-	+			1-	-		C .	160
CQ 92M1H103K		MYLAR	0.015	50V		1		1				- 1	1	1			C .	169
CQ 92M1H153K		MYLAR	0.013			1		1				1	1		1			78,161
CQ92M1H223K		MYLAR				2	1	2							+			166,170
CQ92M1H473K		MYLAR	0.047			2		2			T	1 .	1		1 .			178,191
CQ92M1H683K		MYLAR	0.048			2		2		1	1.		1.5				10.	20
	-	TANTALUM	0.1	35V		1		1		1		100		1	1		C .	37
CS 15E1 VOR 1M		TANTALUM	0.47	35V					+	-	+	1						71,133
CS15E1VR47M		TANTALUM	1	25V		2		2		1			1	1	1	1		44
CS15E1E010M		TANTALUM	2.2	16V		1		1	1								TC >	2
CS15E1C2R2M			20P			1	_1_	1										
CO5-0030-15		TRIMMER																

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PART.NO	NOTE	NAME & DESCRIPTION	000	001			1								REFERENCE.NO
C05-0031-15	NOTE	TRIMMER 10P	2		2										TC , 1, 3
091-0667-05		CERAMIC 0.0047 50V	1		1		- 1	- 1							C ,167
1091-0117-05		CERAMIC 0.01 50V	6		6										C , 2, 10, 17, 67,112,137
C91-1008-05		CERAMIC 0.022 50V	11		11										C , 33, 49, 56, 62, 63,102,123
1									100						,125,146,149,150
C91-0117-05		CERAMIC 0.01 SOV	12		12	1	1								C . 26, 27, 35, 36, 46, 68, 86
1															,111,116,117,139,154
C91-1008-05		CERAMIC 0.022 50V	32		32	!								!	C , 20, 21, 22, 34, 50, 53, 54
1						!					i		<u>!</u>	<u> </u>	, 55, 58, 60, 72, 73, 75, 76
														٠.	. 84, 93, 95, 96,100,104
091-1008-05		CERAMIC 0.022 50V		1 3	1		4 .	1 1	ľ					1	C. ,105,127,128,129,132,134,141
471 1000 05													1		,143,147,148,151,158
C91-0119-05		CERAMIC 0.047 50V	3	İ	3		7]	i	C ,109,113,142
C91-0457-05		CERAMIC 0.022 50V	2		2				l	1]	i	1	C , 28, 66
091-0457-05		CERAMIC 0.022 50V	4		4	1			1			!	}		C , 51, 59,120,124
091-0085-05	N	CERAMIC 0.022 50V	1	-	1									1	C /192
191-0667-05	1 "	CERAMIC 0.0047 50V	2		2	[1		i	Į.	1		C 164,184
091-0119-05		CERAMIC 0.047 25V			1										· C
												1	1	_	1
DTC114ES		DIGITAL TR	1		1										Q , 19
704 0464 OF		RE COAX. CONNECTOR RAPHET, DO			2								1		
504-0154-05	i	TERMINAL 1P	4	ĺ	. 4	- 1				1.			İ		,
E23-0512-05		MINI CONNECTOR 2P	6	1	6				1 .						
E40-0273-05	*	MINI CONNECTOR 4P	1		1			-	-	-	-	-	1		
E40-0473-05	*		4	l	4			i .	1		!	1			
£40-0573-05	*	MINI CONNECTOR 5P	1		: 1				•	4	-	1	1	1	
£40-0673-05	*	MINI CONNECTOR 6P	1	├──	1		-	_			 	+		-	
£40-0773-05	*	MINI CONNECTOR 7P	2		ş	1		ĺ	1	i		1			
E40-0973-05	*	MINI CONNECTOR 9P									<u> </u>	-		!	
G02-0535-04			. 2		2							1		1	
L30-0281-15		IFT	1 4		4				ļ	1	į.		1	L	L , 13, 14, 15, 18
L30-0289-05		IFT	5		5						1				L , 6, 7, 20, 21, 22
L30-0503-05	j	LIFT	3		3				i		1		!	1	L , 25, 27, 33
L30-0504-05	-	IFT	1		1 1]	}	1	1	1	ļ	l	!	L - 32
33-0681-05	N	CHOKE COIL 6.8 UH	1	-	1			1				1	I	T	L , 5
1_34-2231-05	i N	TUNING COIL SOMHZ	1 1		1			ļ		}		1	-	ì	L , 8
34-2038-05	1 "	TUNING COIL	6		- 4	1	-	i	i]		1		1	L , 9, 10, 11, 24
134-2041-05	- -	TUNING COIL	3		3		1		1		1				L , 1, 2, 3
34-2045-05	1	TUNING COIL	3		. 3		1.00		1	1 .	1:0			1.	L ., 23, 28, 29
		INDUCTOR 15 UH	- i	1	1		}	1	1		1000		1"	1.	L , 26
_40-1501-03	1	INDUCTOR 150 UH	2	1	2						1	1		T	L , 17, 19
_40-1511-03	i	INDUCTOR 1 MH	3		3]	-	!	i					L , 16, 35, 36
140-1021-03		INDUCTOR 100 UH	1	1	1	1	1			i			1		L , 38
40-1011-16	-	INDUCTOR 100 UH	1		1	1	1752.1			N 7	17		100	1	L , 30
_40-1011-17	N	XTAL FILTER 10F22S	- i		. 1	0.00	1.	1.2	10	1.	150	100	1		L , 12
_71-0249-05	N		1		1	1	1		18		1	1		1.5	iL , 31
72-0342-05		CERAMIC FILTER CFV455F	1		1	-	-	_	-	\vdash		ø	1		L / 4
_77-1254-05	N		î		1			1					1		L , 34
_79-0446-05	1	CERAMIC DISCRI CFY455S	١,	1	1 -	1	į	1	!			ļ			1 To 1 To 1
MC911		DIODE	. 2	1.	. 2	100	 					1.	7.0	1.	0 , 27, 28
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ND487C1-3R		DIODE	1		1	T									D , 16
		400 000				1					1	1	1		VR , 8
R12-0421-05	L_	TRIM.POT. 100 OHM	1 1		<u> </u>	_				-	_				1

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PART. NO	NOTE	NAME & DESCRIPTION	000	001					Ī.				1				EREN	ICE.	NO.				
12-1429-05	1012	TRIM.POT. 500 OHM	1		1	1			T								6						
12-1430-05		TRIM.POT. 3K OHM	1		1		Ì		ĺ			1	1				2	,		-			
12-3443-05		TRIM.POT. 10K OHM	3	L	3			<u> </u>		ļ.,,		1		ļ	VR	-	1/	- 4	_				
112-3450-05	, N	TRIM.POT. 20K DHM	1 1		1		180	ŀ	1 .	l .	100	100	1.		VR		3,						
R12-7408-05	; Ni	TRIM.POT. SOOKOHM	2	1 ***	. 2	1		- ";	100		E. 14	5.55		3									
TA7302P	: -	10	2		2										"		41,	44					
JPC577H(E,F)		10	1	<u></u>	1	<u> </u>				<u></u>				-	a		47						
PC4558C	1.	IC	1	٠.	. 1	3					180	S	١.		-								
LN60		DIODE	4		4	1]:	2				ļ	D	/	10,	11	<u>, 1</u>	2,	13	-	70
SS133		DIODE	6		6						1	1			D		1/	• >	/ 1	8,	30/	3,	15, 1
\$\$133	i	DIODE	17	1	17		ļ			<u></u>		1	-		D	,		22	, 2	3,			31, 3
	1		1		1			}				i		1.	D -		14	20	, ,	1			
\$1587		DIODE	1 2		2	:	1		1		ł	i ' '		1	10		19	20					
\$1587		VOLTAGE VARIABL	1		1	1	1		-				-		D		3						
152208	i	THERMISTER	2		2	1		ĺ	1					i	D		2,						
112-102-2		THERMISTER	1 1		1		1		į				L.,		D	1	1						
112-103-2	+	THE COLUMN TER	1			1	i		1.				T										
SA1048(Y)		TR	9		9				griz						Q.	,	27/	60					17, 1
SA2458(Y)	-	TR	T												a					8,	59, 6	1,	62
SC3113(B)		TR	2	ł	2	-				[l	1	1		a		54/						
SC2668(Y,0)	ļ	TR	2		2				ļ.,					-	Q		- 10	2		-	40, 4		
SC2668(Y)		TR	5		5					111				1. 1	Q	1	29	30	, 3	8,	40, 4	4	
SC2240(GR)		TR			1	×*.			1. 19		· 1	12.		1	a								28, 2
SC2458(Y)		TR	26				1		<u> </u>		-	·-			Q								42, 4
					1				1		1	ļ			1						51, 5		
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	i		1			İ						. :	١.	Ì							52,		
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25K125 25K30A(D)		FET	1 3		3										Q		10,			6			
25K30A(0)		FET	2		2										Q	,	_6,	7					
37.01.077	+		1							7								_	_	^			32
SK73(GR) .	.	FET TILLIAN TIME TO THE PROPERTY OF THE PROPER	6	1.	6		1	**			1	1		1			34	8	, 2	0,	21, 2	. 4 ,	ے د
35K73(Y)	+	FET	+			1	-	 	-	<u> </u>					1								
												ļ										_	
			1							٠.													
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	+							1.															
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PARTS LIST TS-711A/E

								0.1	STIN	10110	101 8	, <u>w</u>	ANTI	T			_	REFERENCE.NO
PART.NO	NOTE	NAME &	DESCRIPT		7	000												
C45SL1H390J	1.016	CERAMIC		SOV		1												C , 32 C , 2, 3, 45
C455L1H101J		CERAMIC		50V		3									1			
CEO4W1E4R7M		ELECTRO		25V		2												
CE04W1C100M		ELECTRO	10	16V		. 7				.,						- 1		
E04W10220M		ELECTRO		16V		1				.	1		. : .					C 7
		ELECTRO		10V	1	5												C , 5, 22, 25, 46, 56
CE04W1#470M	-	ELECTRO	100	10V		1												C , 47
CE04W1A101M	i			50V	1	1			ļ.				1	1		- 1		C , 27
CEO4BWIHR47M	1	ELECTRO	1	50V	-	18			1									C . 4, 11, 13, 14, 15, 16, 1
CEO4W1H010M		ELECTRO	1	204	i -	-				-				1.		1		, 19, 26, 28, 29, 35, 37, 3
					4	. [:	}					1	1.3			41, 42, 48, 53
	-			50V		. 2	~					,	1	١.			. :-	C , 23, 24
CEQ4BW1H010M		ELECTRO	1		-	1			-		_				-			C , 43
CK45B14471K	ĺ	CERAMIC	470P	50V		11			1		i		-					C , 31
CK45B1H561K		CERAMIC	560P	50V										1				C , 36, 39, 44, 61, 63
CK4581H102K	1	CERAMIC		50V		5		ļ.,	-	1	-	-		-				C 33
CK4581H152K		CERAMIC	1500P	50V	- 1	1				1		[.]	ŀ		1			C , 12
CQ92M1H332K		MYLAR	3300P	50V	.	1							1		1:	-		C , 34
CQ92M1H103K		MYLAR	0.01	50V		1		L	1	-	1	ļ	<u> </u>		-			
CQ92M1+123K		MYLAR	0.012	50V	1	4			İ	1	1			1	1			
CQ92M1H104K		MYLAR	0.1	50V		1					1							C , 50
CS1SE1VOR1M	1	TANTALUM	0.1	35V		1								1	1			C , 59
CS15E1C3R3M		TANTALUM	3.3	16V		1						· .	1	1	1			C . 60
C90-0882-05	1	ELECTRO	220	25V	- I	11	: .		1 - 1	1 3	100	P	125	I.	1987			C 51
		ELECTRO	470	16V		1				1	1	1 .		1				C , 49
C90-0820-05		ELECTRO							1		ĺ		1	7	i			
	1.	MINI CONNECTO	10 30			1		ì	1	i				i	1			
E40-0373-05		MINI CONNECTO	D / D		i	- 1				Ì	1				1	1	í	
E40-0473-05	*				- +	2			1	+	1	-		1				
E40-0573-05	*	MINI CONNECTO				1		1.0	i		1 .		1	1	i			
E40-0673-05	×	MINI CONNECTO	R OP		. 1	1		ĺ				1].	1				
E40-0773-05	x	MINI CONNECTO)R 7P		-	1		-		-	-	-		-	-	1	_	1
E40-0973-05		MINI CONNECTO)R 9P		į	- 1		1	1	1	i	}			1			
	j	1			į	1		Į	1		i	1		1				Q , 11
MB3713		10						-	-	-	-	-		+	-		-	D , 2, 8
MC 911	1	DIODE				5			İ				1		1	1	i	D 11
MC921		DIODE				1			1	1	1		i .		1			10.00
1.4722	1	1						-	<u> </u>			-			-			19 , 4, 9
NJM4558S		110			i	2		1	1	1	1	ì		1				Q , 4, 9
N30-3004-46		PAN HO SCREW				1,			1		1		i		i	1	1	
1420-2004-40		1			1				<u></u>			J	L		<u> </u>			
R12-3443-05		TRIM.POT.	10K OH	M		.5			1		1		1.7	ļ	i i			VR , 1, 3
R12-3443-05	-	TRIM.POT.	50K OH			1.			1 9		1	1 1	i s	1:	100		1.1	VR - 4
		TRIM.POT.	100KOH		1	1		111	1		1	1.		<u> </u>	1	<u> </u>	<u> </u>	VR , 2
R12-5420-05	+	TINIM. PUT.	2001011					-				1		i			:	
					i	1		i	1			i	1				1	Q , 5
UPC1158H2		IC			- 1	-									1	ŧ		
						1		1-	1		1	-	—	1	1		1	0 , 5
1N60		DIODE				1			1	1		1			1			0 , 10
188133	1	DIODE			- 1	6		1				1	1	1.	i.	i	-	0 , 1, 3, 4, 6, 7, 9
199133		DIODE						+-	+	+-	+	-	-	1		_	1	
						_	i		1				1	į	1	1		9 , 2, 13
25A1048(Y)		TR				2			i						1	ĺ	İ	Q , 3, 7, 8, 10, 12, 14, 1
25C2458(Y)	i	TR				8	-	 		-		+		-	1	-		1 16
	-	1					1		1	1	-	1 -	1	1.	1.45	1 .	1	
28C2459(GR)		TR	. ,			1				1 .	ļ	1	1	1		1	1	
25K3OA(GR)	1	FET	*			1			1	1		1 .		1	-	-	1	Q ', 6
ED (DOKIGE)		 					1				1	1		1	1	ĺ	1	
		1			- 1					i	i	1	1		1	1		T .
		Į.						<u></u>			1				1			1

PLL UNIT (X50-1990-XX) (-00 : T,W -11 : K,M1,M2,X)

					-				NCTI	ON	8 61	JANT.	117				REFERENCE NO
PART.NO N	ROTE	NAME 8	DESCRIP	TION		001	011	012		↓	<u> </u>			-	-	-	C / 91
C45CH1H060D		CERAMIC	6P	50V	1		1		1	t	1			į.	1		
CC45CH1H010C		CERAMIC	19	50V	1		1		İ	1	1	1 -		1	1	1	C /125
		CERAMIC	7 P	50V	1	į .	1			L	1	L			<u> </u>		C ,110
CC45CH1H070D		CERAMIC	47P	50V	- 5	1	5		1	1.14	1.	1	,,,,	10.1	F		C 14. 32. 89.161.170
CC45SL1H470J			5P	50V	2	1 .0	2	187		1.5	1.	1	100	ł·	1: '	12	C 66,152
CC45CH1H050C		CERAMIC		50V	1	-	1 1		1	1.1	1	1		11	1	1 1	C ,120
CC45CH1H060D		CERAMIC	6P	50V	2		2		+	-	<u> </u>	-			-	1	C ,137,158
CC45CH1H100D		CERAMIC	10P		4	1	4		1	i	ł				1	1	C , 30, 81,119,164
CC45CH1H180J	- 1	CERAMIC	18P	50V		1	2		1						1	1	C , 96,155
CC45CH1H080D	1	CERAMIC	8P	SOV	2					-				 	ļ		C /146/160
CC45SL1H101J		CERAMIC	100P	.50V	5	1	2	1.	1	1.	1. :	1.2	43.	-	1 .	1.1	C 95,165
CC45CH1H150J		CERAMIC	15P	50V	2	100			1		11.00	1 :	130	1	100	19	
CC45SL1H221J		CERAMIC	220P	50V ·	1 .1	ļ	1		1.	ł	F 3				1	1	
CC45CH1H100D		CERAMIC	10P	50V	1 1		1	T	T						1	1	C /135
	ŀ	CERAMIC	27P	50V	1		1	1	1		1			i	1		C 118
CC45UJ1H27OJ			330P	SOV	ī	1	1		1		1	1		1		ł	C , 46
CC45SL1H331J		CERAMIC	158	50V	1		1		+	-	1			1			C , 65
CC45CH1H150J		CERAMIC		50V ·	2		2		1 .	{·	1.	1		i	1.		C , 52, 54
CC45CH1H180J		CERAMIC	182		3		3			1			ł	١	1	1	C -144,162,169
CC45CH1HOR5C	1	CERAMIC	0.5P	50V			2		1	-	-	-	-	 	1	+	C ,136,148
CC45CH1H22OJ		CERAMIC	22P	50V	2					1	1	1		1	ĺ	1	C , 1, 9, 20, 22
CC45CH1H22OJ	- 1	CERAMIC	22P	50V	4		4	1			1	l		l	1		C . 21. 44.124.151
CC45CH1H030C	- 1	CERAMIC	3P	50V	4		4	ļ.,,				-					
CC45CH1H270J		CERAMIC	27P	50V	1		1	1			}	1.					C . , 43
CC45CH1H040C		CERAMIC	4 P	50V	1.		1	ŀ	Ι'	i	1	1	ľ	1	1	1 .	C 2 64
		CERAMIC	27P	SOV	3	i	. 3	1	1	1 .			l	1		L	C , 10, 50,121
CC45CH1H270J		CERAMIC	33P	50V	2		2			T		T	l	1			C ,128,129
CC45CH1H330J	i		33P	50V	3		3	1			1		l	1	1	1	C , 3, 40, 85
CC45CH1H330J		CERAMIC		50V	1		1		ļ		1	1	ļ	1	1		C 4147
CC45CH1H050C		CERAMIC	5P		1		1		 	+	+	 			+	1	C 45
CC45CH1H680J		CERAMIC	68P	SOV			4		1	h .	}	1	٠.	l	1	1 .	C , 82, 84, 86, 88
CC45SL1H390J		CERAMIC	39P	50V	4		4	ł				1		1 .		. 1	c /147
CC45CH1H050C	1	CERAMIC	5P	- 50V	1		-				-	-	*	 	+-	-	
CC45SL1H470J		CERAMIC	47P	50V	4	1	4	1	1	1			į.	1		1	
CC73ECH1H010C	1	CHIP CAP.	1.9	50V		1	1	1		1				1	1	i	C , 61
	1	CHIP CAP.	8 P	SOV	1	1	1	1	1	1	1	İ		i	Ī		C , 63
CC73ECH1H080D		CHIP CAP.	7 P	50V	1		1	1			-		1		1	1	C , 62
CC73ECH1H070D			102	50V	"	ļ	1	ŀ		1	1	ł	1.0		1:		C 2. 62
CC73ECH1H100D		CHIP CAP.	16P	50V	1 1		1		-	1	1	ł	1	1		Ι.	C , 60
CC73ECH1H160J		CHIP CAP.		25V	1	+	1		+	+ -	-	_		-	_	-	C , 58
CEO4W1E4R7M	- 1	ELECTRO	4.7		ŝ	1	5		1	i	1	1		ļ			C , 77,107,113,116,150
CE04W1A470M i		ELECTRO	47	10V						1		1	ļ	1		1	C , 69, 99,122
CE04W1A101M		ELECTRO	100	10V	3		3		∔	-	-			 	-	-	C , 8, 11, 13, 57, 94, 97, 10
CK4581H102K		CERAMIC	1000P	50V	10	1	10	1	1	1	1	ŀ	i		1	1	
					1	1	1	1		1		l l	l			1	,117,145,166
CK45F1H103Z		CERAMIC	0.01	50V	4		4		1		1	1		<u> </u>	1		C , 47,138,143,156
		CERAMIC	680P	50V	2		2				1				1		C /101/103
CK45B1H681K	i		1000P	50V	12		12			ļ		ł		1	1		C , 2, 6, 7, 12, 59, 68, 7
CK45B1H102K		CERAMIC	1000	244	1	1	1	1	1	ł						1	, 71, 92,131,167,177
				FAV	1	-	1	+	+	 	+		-	-	1	-	C , 74
CQ92M1H222K		MYLAR	22008	50V	1	1	1		į		1	ł		1	1	1	C ,114
CQ92M1H822K	i	MYLAR	8500b	50V					1	1	1		1	1.	1	1	c , 75
CQ92M1H223K		MYLAR	0.022	50V	1		1		-	1-				<u> </u>	-	-	C , 56
CQ92M1H473K		MYLAR	0.047	50V	1		1		1	1	1		1	1	1	1	
CQ92M1H683K	- 1	MYLAR	0.068	50V	1		1		1	1	1	1		[1	1	C -111
CS15E1VR22M		TANTALUM	0.22	35V	1		1		1	J	L	l				<u> </u>	C , 49
		TANTALUM	0.47	35V	1	1	1	1	1		T		·			1	C , 78
CS15E1VR47M	3		1	25V	2	1.	2	1	1	1.	1	i	l	1		1	C , 72, 73
C\$15E 1E010M		TANTALUM		234	1	1	1		1	1 .	1	1 : -	ŀ			i	TC , 2
CO5-0062-05		TRIMMER	6P		1	+-			+	+	+			-		 	TC , 1
C05-0030-15		TRIMMER	20P						I		i		ĺ	1			TC , 3, 4
CO5-0067-05		TRIMMER	25P		2	1	2		1	1	1)		1		1	
C91-0117-05		CERAMIC	0.01	50V	15	1	; 15	1	1	l	L	1	L	i			C , 5, 19, 23, 24, 29, 33, 3

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					DIST	INCTI	ON	& G1	THAL	ITY						
PART.NO	NOTE	NAME & DESCRIPTION	000	001 01	1 01	2		1	T	:				7 1	REFEREN	
	1		1			_	•			:				1	, 39,	51, 76, 79, 90, 96,1
	i					1	1	i	l	1	1			1	-154	
091-0117-05	- 1	CERAMIC 0.01 50V	7		7		1	1	ļ	!				l c		48, 53,108,115,126,1
091-1008-05		CERAMIC 0.022 50V	21		1		1	-	-	. 	-	 		Τč		17, 25, 26, 27, 28,
191-1008-05	1	CERAMIC 0.022 JOV	1 5+1	-	T .	1			1		1	ŧ	ì	1-		
		* *			1.	1		1				1	1	1		37, 38, 55, 80,105,1
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C91-1008-05		CERAMIC 0.022 50V					1	1		İ	1	1		С	+176	
091-1008-05	1	CERAMIC 0.022 50V	15		5	1		i		1				C	, 16,	18, 31, 42, 98,100,1
	3] [1		+	!	1	1					1	,130,	139,141,142,157,159,1
					_		_	1		i.	-	-			1168	
			1 1		-	i	ŀ	1		1	i i		1	1		
E04-0154-05	,	RF CDAX. CONNECTOR RAPHET, DO	! !		1		1	1		1			:	1		
		TERMINAL 19	9		9	+			-		-		 	 		
E23-0512-05	į						i		!		1		i	ì		
E40-0473-05		MINI CONNECTOR 4P	1 1		1		1			1	1	1	i	1		
E40-0673-05	±	MINI CONNECTOR 6P	1 1		1			1		1		<u>i </u>				
E40-0873-05	*	MINI CONNECTOR 8P	1		1	-1	i	1	i -					1		
				1		i		1		1	1			İ		
£11-0818-14		SHIELD CASE(VCO TOP CASE)	1	i	1	1	1	į		1	1	İ	1			
					-		-	1	1	-	-		1	+		
L30-0289-05		IFT	1		1	1	1	1		1	İ		Į.	L	. 44	
L30-0281-15		IFT	2		2		1		i		ļ			li.	, 9,	4.7
						-		-	-	-	-	-		it	, 21	
L32-0624-05	1	OSCILLATING COI-	1		1	1	1. 1	1 .			1					
L32-0639-05		OSCILLATING COIL SOMHZ	1: 11		1		1	1	ŀ.		1		100	L .	× 33	
133-0647-05	1	CHOKE COIL 18 UH	1		1	<u> </u>	<u> </u>	10.7			1	1 .		L	, 14	
L33-0668-05	1	INDUCTOR 3.3 UH	1		1			1	i				1	ı iL	, 20	
L34-0894-05	:	COIL 3 ST	2		2	1	1	!					1	14	, 25,	26
_34-0908-05		COIL 3 9.5T	3	1	3	1	ļ	!		i	i		1	11	, 24,	27, 35
L34-1033-05		COIL 3 8.5T	3	1.	31	1		1		-	1	1	1	TL	/ 1/	2, 3
134-0683-05	į	TUNING COTI	1 1		1/		1	1 .		1.	1	Ι΄.	1	1	0 4	
134-0749-05	i	TUING COIL	2		2 i		l,			1				i.	, 45,	
		TUNING COIL	2.				<u> </u>	1	-	-	-			15	0 470	
_34-2041-05	1				2			1		,			ì	1		
L34-2232-05	N	TUNING COIL 51.2MHZ	5 ;		5	!		ļ	i					L	. 39,	
L34-3064-05	- 1	TUNING COIL	2 '		2			<u>i </u>						L	, 5,	7
L34-3066-05		TUING COIL	1	- 1	3		1						1	Ł	, 6	
L40-6891-03	1	INDUCTOR 68 UH	3		3		!	ľ			1	ľ		£	, 37,	38, 43
L-0-1011-17	-	INDUCTOR 100 UH	: zl	!	2	1	1	1	1		-	1		L	, 32,	34
L40-1511-03		INDUCTOR 150 UH	2		2			-					!	L	1 :21	. 15
40-3311-03		INDUCTOR 330 UH	2		2	1	1	ì			1	!	ĺ	lī.	, 30,	
40-1021-03	i	INDUCTOR 1 MH	3		3		1	i :		!	!	l	1	lī.		16, 18
			11			-	-	-			-	_				10, 10
40-1092-16			2		2	1	1	100	100	J	l			E.	, 22	**
L40-1011-14							1	[` -]	ľ.: ,	lo fil	1 5 7	l :		1	, 23,	
140-4711-13		INDUCTOR '470 UH	1		1									16	, 42	
72-0346-05		CERAMIC FILTER SFE11.025MJ-A	2		2					1			i	14	, 8,	10
77-0950-05		XTAL 10.6965MHZ	1	- 1	1	1	1	!		i	Į.	1	ļ	L	, 17	
77-0951-05		XTAL 10.6935MHZ	1		1	1	1	1		İ		1	ļ	L	, 19	
L77-1255-05	N	TCXD 10.240MHZ	1		1	77.77	-	1		1		_		L	, 41	
79-0644-05	N N	BPF SABPJB3	2		2	150		130				15.	l	I E	. , 28,	. 20
.,,-0044-05	1 "	were an armenda		11	10	100	İ	1000	200					1	. , 40,	
		1100		-		-	<u> </u>	-		_		-	-	-		
1A856		DIODE	2		2)					l l		ı	i	0	, 4,	5
4C145155P*K		IC	1		1	i	1	1				:	1	Q	, 21	
MC145156P		IC	1		1 1	1							l	Q	1 :9	
MC921		DOUBLE DIODE	2		2	1	į.				1	5		Q	, 6,	8
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154459L		IC	1		1							ì	1	Q	, 23	
		• *		-	-	+			_			 		-		
1JM78L05A		10	1		ıİ		I	1		,			1	a	, 37	

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112-1405-05	1	TRIM.POT.	1 K	OHM		3		3	į		,					i		VR , 1	, 2,	3	
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SN74_S90N		IC				1 2		2		1	1	 	+	-	 	1		Q , 3	, 36	47 74	
3147 4 2 4 7 4 14							1	1						ĺ.	12						
TA7302P		IC				1		: 1					1				1	Q , 30			
	1					1 .	1	١.			!	İ			-			9 . 20			
JP8555C	1	IC				1	1	1		1	i	İ			1	İ		9 , 20			
1SV50	-	DIODE				3	1	3	-		 		+	1	1	†	-	0 1	, 2,	3	
13730						-	1						į	1						-	
2SA1048(Y)		TR				1		1		Ĺ	L		1	<u> </u>			!	Q , 15			
2SC2459(BL)		TR				3		3				i	ĺ		Ì		t		. 14.		
2SC2459(BL)		TR TR				3 4		3 4				İ	İ		-				, 26,	27 35, 39	
25C2458(Y)	-	TR				+		3		-	-		-	-	-	+	 		, 33,		
2SC2458(Y) 2SC2787(L)		TR				3		3					1						, 8,		
2SC2668(Y,O)		TR				1		1			1	!	i			l.		Q , 24		-	
2SC2668(Y,0)		TR				1		1					1	T				Q , 32			
2SC2668(Y)		TR				6		6		1	1						1			7, 18,	29, 40
2SC2668(Y)		TR				1 2		2	-	-	-			-		-	1	Q , 1 Q , 10	3.0		
25K192A(GR)*N	1 1	FET				ľ		1 -					1					10	, 20		
3SK73(Y)		FET				1		1									1	Q , 2			
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PARTS LIST TS-711A/E

TONE		IVES	1200	COL	/T 18	n
TONE	HINIT	イX57-	7 7 YU.	hill	(L.W	"

ONE UNIT	1					DI	STIN	CTIO	N 8	QÜ	ANTI	TY				DECEDENCE NO
PART, NO	NOTE	NAME B	DESCRIPTION	060												REFERENCE.NO
(4581H102K	HOTE	CERAMIC	1000P 50V	1				\neg			ļ	- 1	1	i		C .
392M1H472K		MYLAR	4700P 50V	1			- 1	i		- 1	1			- 1	i	c c
992M1H103K	1	MYLAR	0.01 50V	1												C
Q92M1H333K		MYLAD	0.033 50V	1		1			ļ	-		1	ĺ	. 1		C
90-0847-05		ELECTRO	47 10V	1		1	t	- 1		- 1		- 1	- 1		- 1	Ğ
91-0433-05	1	CAPACITOR	0.01	1					_							C
91-0117-05		CERAMIC	0.01 50V	1										Ì		
40-0417-05				1	-				-					-		
16555P		IC		1											1	IC , 1
D14882C472J	+	RES. CARBON	4.7KOHM 1/6W 12K OHM 1/6W	1 1									Į	- 1		R
D14882C123J		RES. CARBON	33K OHM 1/6W	1 1		li	- 1	- 1	- 1	- 1				1		R
D14882C333J	-	RES. CARBON	47K DHM 1/6W	1						-						R
014882C473J N148K289102F	i	METAL FILM	91K 1/8W: 20K	1	.			1								R VR 2 1
12-3521-05		I RIM. POIL	EUK.													
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CONTROL UNIT (X53-1410-XX) (-11 : K,M1 -21 : M2,X -51 : T -61 : W)

						Ð	ISTI	NCTI	DN C	& Q1	IANT	LTY				
		NAME & DESCRIPTION	17	011	012	021	022	051	052	061	062					REFERENCE.NO
	STON		-1,	2		2		2		2						C , 52, 53
C45CH1H150J		CERANIC		ī	1	ī		1		1			i			c , 73
CC45CH1H27OJ		CERANIC	- 1	- 1		1		1		1	l	i	ļ			C , 72
CC45CH1H27OJ		CERAMIC 27P 50V				1		1	2222	201				 	11	C 72 C 54 C 44 C 65, 69
CC45CH1H330J		CERAMIC 33P 50V		. 1	8 1	*1	1000	1	P	200	8.0	36.5	1. 3.	2 3 38	200	10 10 44
CC45SL1H121J		CERAMIC 120P 50V	:::1	. 1	1			2	100		MAG.	1400	100	100	D. 1	C 65, 69
CEO4W1C221M		ELECTRO 220 16V		- 2		2			1	. 2			2.5	1 1 1 1	-	C , 66
CEO4w1A471M		ELECTRO 470 10V		1		1		1		1				ļ	1	G , 19
		ELECTRO 0.47 50V	l.	1		1		1	l	1			!	i	1	
CEO4W1HR47M		POLYESTER 0.1 50V	- [2		2		2	L	2			1	<u></u>		C , 47, 79
CF92V1H104J		POLICIEN		. 1		. 1		1	1.7	1 1	1		100	1 X.		C 2 37 C 21 21 21 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2
CK45B1H182K		CERAMIA	· v	1	3.8	1		1	1000	. 1	1000	12		1 1	350	C 21
CQ92M1H182K		MI LAN	- 1	. 1	10.0	1		1 4	1373	1	100	20	100	1	1	C 43
CQ92M1H102K		MILAR		1		1		1	-	1					-	C , 46
CQ92M1H682K		MYLAR 6800P 50V	- 1			1		1	1	i						C , 22
CS15E1A100M		TANTALUM 10 10V	- 1	1				1		1			1		1	C 45
C90-0838-05		ELECTRO 1 50V		1		_ 1									├	C , 48, 50
C90-0846-05		ELECTRO 33 10V		. 2		2		2	1	2	١.	1		1 -	1 .	C 42
C90-0847-05		ELECTRO . 47 10V	- 1	1		1	1:	1	1	.1	1. 1.			1. 1	k -	
	,	ELECTRO 0.1 50V	1	1		1		1	I	1 4	1			10.0	-	C 13/2/41
C90-0837-05		LL L U I II U		8		8	T	8	i T	8]		1	l	C , 7, 8, 16, 30, 31, 70, 7
C91-0457-05		CERRITO		_		2		2		2						, 84 C , 26, 64
C91-0457-05		CERAMIC 0.022 50V		2									 	-		1. 9. 10. 36
C91-0753-05		CERAMIC 470P SOV	- 11	. 4		4	1 .	4	1	4		11	1	11.	£ 1.	C , 1, 9, 10, 36
C91-0117-05		CERAMIC 0.01 50V	. I.	1		1	1.5	. 1	1.1		100]. : .	1		-	10 80
		CERAMIC 0.001 50V		21		21	1	21	1 - 1 -	21	200		1	11	100	C . , 2, 3, 4, 5, 6, 11, 1
C91-0757-05		CERAMIC OLOGE							Π			Γ				, 13, 14, 29, 32, 35, 38, 3 , 40, 68, 79, 80, 81, 82
		CERAMIC 0.001 50V	1									}				C , 83
C91-0757-05		CERMITO		- 4		1	1	1		1						C . 56
C91-0753-05		CENANIA		. 1	11.	1 4	181	4	200	4	100		1.1	1 .	100	C. , 27, 28, 77, 78
C91-0757-05		CERAMIC 0.001 50V	.	5		5		5		3		1		ŧ .	1 2 4	C , 17, 25, 63, 74, 75
C91-0769-05		CERAMIC 0.01 SOV			-	- 3	+	1 3	+		-			 	1	
DAP401	N	DIODE		6		6		6		6 3						D , 1, 3, 4, 5, 6, 7
DTA114YS		DIGITAL TR		3		3					-	 	 			9 , 2, 4, 6
DTA114YS	N	DIGITAL TR		3		3		3		3		1			1	9 11, 12
DTC143TS	."	DIGITAL TR		2		2		2	-	. 2		1	1	1.		u , x 117 12 ;
E02-0122-05	N	IC SOCKET 24PIN		1		1		1		1						
E23-0512-05		TERMINAL 1P	1	5		2	1	2		2				l		
623-0312-03	1	-	- [L		.l							ļ.,,	
J32-0761-04		STUD & BOSS (STICK TYPE)		1		1		1		1			1	i	1.	
	N	XTAL 3.6864MHZ	.	1		1		1	1	1					1	X , 2
L77-1206-05	10	CERAMIC OSC 4MHZ		1	I	1		1 1		1		1		I		X , 1
L78-0009-05	N N					1					1		1		1	
MB8418-20LP-GRA	N	IC BBIT X2(RAM)		1		1 1		1	-	1		-	ļ	-		10 - 14
MC14584BCP	-	IC .		1		1		1		. 1	-	100		1	1	IC , 1, 2
MC14069UBCP		lic		2		2		2	7 .	2	1.	1	1	1.		10 / 1/
	}	ic		_ 1		1		1	I	1	L.	1		1	1	IC , 19
MN6127A		ZENER DIODE 12V		1		1		1	1	1	1	1	1		1	D , 17
MTZ12JB	ì	TENER GIODE	1	1		1		1 1		1	1	1	1	1	1	D , 11
MTZ9.1JB			- 1	-	ţ	1 -		1	1	1	1	1	1	1	1	IC , 16
M5L8255AP-5	N	IC					-	+	1	+	-	+	1	1		
	1	1		_		١ .		2		2			1	2,	1.	
N30-3006-46	1	PAN HD SCREW		. 2		. 2			1	2	1			1	1:	
N30-3010-46	1	PAN HO SCREW	1	1		1		1	1			1	1	-	-	·
		TAPPING SCREW		2		T 2		2		2			1	1	1	
N87-2606-46	1	INITIAG SCALE	1					1		1						
	N	16		1		1		1		1		L.		1		IC , 10
PST518A	i N	116										_				

TS-711A/E PARTS LIST

				DIST	INCTION	& QUANTITY	DEFENENCE NO
PART.NO	NOTE	NAME & DESCRIPTION				2 061 062	REFERENCE.NO
R12-4416-05	N	TRIM.POT 50K	1	1	1 1	1	R . 3, 15
R90-0515-05		RESISTOR BLOCK 10K	2	2	2	2	8 , 89
R90-0521-05		RESISTOR BLOCK 47K X7		1		111111	R , 83
R90-0532-05		RESISTOR BLOCK 27K X5	1	1	1		₹ , 38
R90-0534-05		RESISTOR BLOCK 10K X5	1:	1	1		R , 70
990-0578-05	N	RESISTOR BLOCK 5.1K X10					
		ic	1	1	1	1	IC 23
SN74LS05N		IC	i	1 1	1	1 1	IC / 23
SN74LS32N SN74LS138N		IC	1	1	1	1	IC , 15
SN74_S174N	1	ic	3	3	31	3	IC , 12, 17, 22
34/4727/-14		10	1				
TC40118P		IC OR BU40118P	7	7	7	7	IC , 3, 4, 5, 6, 7, 8,
TC4069J8P		ic					10 , 16
TMP8255AP-5	N	10	1	1	1	1	114 / 10
	ĺ		1	1	1	1	IC , 18
UPC4558C		; IC	1	1	1	1	IC , 21
UPC7805H		MICRO-PROCESSOR	1 1	1	1	11	IC , 24
JP07802G-087-36		MICRO-PROCESSOR	1 -	*	1 1	1 ", ,	IC , 16
JP08255AC-5	N	MICRO-PROCESSOR FOR DCS	1 -1	4	1	1 1	ic , 20
CP07507G-575-00		-41C40-540CE330K -0K 003	- -	1			
155133	i	DIODE	19	19	19	19	0 , 2, 8, 9, 10, 13, 14,
122122	į	, , , , , , , , , , , , , , , , , , , ,		1	1 1		, 18, 19, 20, 21, 22, 23,
	1	1			[, 25, 26, 27, 28, 29
155133		DIODE	4	1	1		0 , 30, 31, 33, 35
155133	ĺ	DIODE		3	ii	1 1 1	D , 30, 33, 35
188133	<u> </u>	DIODE		i 1	5		0 , 16, 30, 33, 34, 35
155133		DIODE				6	0 , 16, 30, 31, 33, 34, 35
	:	1	1		1	1	Q , 14
Paul Prairie		R	2	2	2	2	9 . 18. 20
2SA1015(Y)	:	¹ TR	1	1 1	1	1	Q , Z1
25A1048(Y)	-	TR	-				Q , 21
2SA1115(E)		TR TR	3	3	3	31	Q , 16, 17, 19
2\$A1015(Y)	i	TR	1 11	1	1 1	1 1	1 . 0 . 13
28C1959(Y) 28C2458(Y)	-	TR	41	. 4	4	41	Q , 7, 8, 9, 10
25C27O3(O,Y)		TR	1	1	1	1	Q , 15
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		X54-1820-11)			3	ISTI	NCTION	& QUA	YTITY			
PART. NO	NOTE	NAME & DESCRIPTION	01	11		T			1	-		REFERENCE.NO
CC45SL1H101J	NUTE	CERAMIC 100P 50V		1				1	1	' '	T C	, 20
	i .	ELECTRO 10 35V		2	ĺ		l I	1 :	1 1	1 1	C	, 12, 13
CE04W1V100M	1	ELECTRO 10 16V		2			!!	1 !	1	' 1	C	, 10, 14
CE04W1C100M		ECCO.NO		1		-		+	1		C	, 8
CE04W1C330M				1		1.	l i	1	1 1		l c	, 5
CEO4W1A47OM	1	LLLGING	. [1	å				1 1		1 1	c	, 1, 2, 3, 15, 16, 17, 1
CK4581H102K	1	CERAMIC 1000P SOV		0		-					-1-	. 19
				-	- 1	1	!	1 :	- !		c	, 11
Q92M1H103K		MYLAR 0.01 50V	i	1	i		! [1 1	1 1	1 6	
CQ92M1H223K	-	MYLAR 0.022 50V		1								
091-0769-05		CERAMIC 0.01 SOV .		1				1 !	! 1	1 1	10	, 6
091-1008-05	1	CERAMIC 0.022 50V		2		1	l I	1 1	1 1	i	C	, 7, 9
					1		l l					
TA124EF	N	DIGITAL TR		2				T			G	, 11, 12
VIN16461	- "					1	1	[]	1 1		- 1	
E06-0858-05		SP METAL SOCKET		1	- 1		!	[]		i	!	
E11-0401-05	-	EARPHONE JACK EXT.SP		1						1	1	
		EARPHONE JACK		1	1	1					1	
E11-0407-05		PHONE JACK PHONES		1	- 1	i			1 1			
E11-0413-05				11	-	1		1	-		1	
E11-0422-05,	N	ING. BROWN		i	1	1	1	1 1	1 [1 1		
E31-3052-15	N			1	i			1 1	1 1	1 1	+	
E31-3053-15	N	TAPE CABLE 12X25MM	_		-	-						
£31-3054-05	N	TAPE CABLE 4X50MM		1	- 1		1 1	1 ;		- i	i	
E31-3055-05	i N	TAPE CABLE 11X50MM		1	- 1	1	! !	1 1	1 1	! [1	
E31-3056-05	N	TAPE CABLE 12X50MM		1	-	-						
				- 1	- 1	}		1 1	1 1	!	1	
FIP11FM7		DISPLY TUBE		1							٧	, 1
119-0323-05		TRANSFORMER		1					1 1		T	. 1
	1	IFT		1	ı	1			1 1			, 2
130-0504-05	1.	INDUCTOR 150 UH		1					- 1 - 1	1 !	i L	, 3
_40-1511-14		1.000.01	-	11	_	1		1			iL	, 1
-40-1011-04	1	INDUCTOR 100 UH		-1	l		! !	1 1	1 1	1 1	- [
	1			21	1			1 1	1 1	1 1	0	, 3, 4
MC931		DICOE		1	+			+	-		D	, 2
MTZ6.2JA		DIODE		1	-	1	1	1 1	1 1	i !	0	, 5
MTZ7.5JA		DIODE		1				1		1		
R12-2413-05	+	TRIM.POT.(5K)		1		T					VR	
812-3446-05		TRIM.POT.(30K)		1				l i	1 1	1 1	VR	
312-5420-05		TRIM. POT. 100KOHM		1							VR	
912-7403-05		TRIM.POT. 500KOHM		1	ì		l i	i !	1 1		VR	
819-3420-05		POTENTIOMETER	- 1	1	1				1 1		VR	
R19-9409-05	N	POTENTIOMETER		1	i	1		i			IVR	
R24-9404-05	N	POTENTIOMETER		1;		T					1 VR	
		RESISTOR BLOCK 47K OHM X5		ī						1 1	R	, 25
R90-0520-05		RESISTOR BLOCK 47K OHM X6		il	1	1				į.	R	, 24
890-0522-05		RESISTOR BLOCK 47K OHM X11		1	-i	+		++-			R	, 23
890-0579-05	N	RESISTOR BLOCK 474 GRA ATT		1	1	1		1		1 1	- 1	
TC50668P		IC .		2		1					- Q	, 7, 8
	1	! .		1				1 1		1 1	Q	, 6
JPA80C		IC			i	1			[]	i	0	, 5
JPD763C	16	IC		1	+-	+	 	+				
	\top			. i	- !			1 i	1 1	- 1	D	. 1
1060		DIODE	1	1		!	1 1	1 1	1	1 !	TH	
112-351-2		THERMISTOR		1		.i		4			I H	1 , 1
·	_		- 1			1		1 1		1 1		0 10
2SC1959(Y)		TR		2	1	1	1	1 1			Q	, 9, 10
1002/68(V)	ı	TO	- 1	1	1	1 1	1 1	: :	1	1 1	Q	, 4

PARTS LIST TS-811A/B/E

SEMICONDUCTOR (TS-811A/B/E)

- N : New parts
- * : Please note that parts are sometimes not in stock and it takes much time to deliver.

MICONDUC	Re-	Part No.	Item	Re- marks	Part No.	<u> </u>	tem	marks	Part No.
Item	marks		Resistor block		\$10VB20	Power	module		M57745
Diode	Z	1N60 1S1587 1SS97 1SS101 1SS133 1SV50 DAP401 MA856 MC911 MC921 MC931 MI308 MI407 ND487C1-3R	Resistor block Photo TR Digital TR	2	PN126S(R) DTA114Y(S) DTA124EF DTC114E(S) DTC143T(S) 2SA933S(Q) 2SA1012(Y) 2SA1015(Y) 2SA1048(Y) 2SA1115(E)	IC IC	Hilodure	Z Z	BU4011B LM358P M54459L M5L8255AP-5 M83713 M88418-20LP-GRA MC14069UBCP MC14584BCP MC145155P*K MC145156P MN6127A NE555P NJM78L05A
Vari-cap		U058 V068 1S2208		N	2SA1307(Y) 2SC1740S(Q) 2SC1815(Y) 2SC1959(Y) 2SC2026 2SC2240(GR)			N	NJM4558S PST518A SN74LS05N SN74LS32N SN74LS90N
Varistor Zener diode		MV13 VD1223 MTZ6.2JA MTZ6.2J(A,B) MTZ7.5JA MTZ8.2J(B,C) MTZ9.1JB MTZ12JB			2SC2458(Y) 2SC2459(BL) 2SC2459(GR) 2SC2570A 2SC2668(Y) 2SC2668(Y,O) 2SC2703(O,Y) 2SC2702 2SC2787(L)			2	SN74LS138N SN74LS174N SN16913P TA7302P TC4011BP TC5066BP TMP8255AP-5 µPA80C µPB555C
Disply tube		FIP11FM7		N	2SC3113(B) 2SD717(O,Y)				μPC78M08H μPC577H(E,F)
LED Thermister		LN66(R) LN01201C LN01301C LN01401C	FET		2SK30A(GR) 2SK30A(O) 2SK125 2SK161(GR) 2SK192A(GR)*N 3SK73(GR)			2 2	μPC1158H2 μPC4558C μPC7805H μPD763C μPD7507G-575-0 μPD7802G-088-3
		112-103-2 112-351-2 SDT1000F			3SK73(Y) 3SK129(S,T)			N	#FD6299AC-9

NCODER ASS'Y (V	Re- marks	NAME & DESCRIPTION	Q'TY	REFERENCE. NO
CE04CW0J330M	Institut	ELECTRO 33 6.3V	1	C1
LM358P LN66(R)		IC LED	1 3	IC1 D1,2,3
RD14BB2C102J RD14BB2C105J RD14BB2C181J RD14BB2C182J RD14BB2C222J RD14BB2C472J	, , , , ,	RES. CARBON $1k\Omega$ RES. CARBON $1M\Omega$ RES. CARBON 180Ω RES. CARBON $1.8k\Omega$ RES. CARBON $2.2k\Omega$ RES. CARBON $4.7k\Omega$	2 2 3 4 1 4	R5, 10 R8, 13 R1, 2, 3 R6, 7, 11, 12 R15 R4, 9, 14, 16
R12-2413-05 R92-0150-05		TRIM. POT. 5kΩ SHORT JUMPER	2 2	VR1,2
PN126S		PHOTO TR	3	01, 2, 3
VO6B		DIODE	1	D1
2SC2458(Y)		TR	1	Q4

TS-811A/B/E PARTS LIST

				- 4 -
TC.	. 211	\R/F	GENE	HAL

13 -011A/D/E	<u>, </u>	4 2 1 1 1 1 1 2 1	1	•	D	ISTI	NCTT	ĎΝ	& QUAN	TITY				
		NAME & DESCRIPTION	011	021		061		1 7	T	1			\Box	REFERENCE.NO
PART.NO	NOTE		1	1	1			-			1			
A01-0979-02	N		1	1	1					ì	1		- 1	
401-0980-02	N		i	1	î				1	1	1	!		
A20-2529-03	N	PANEL	1		-	+	 	 				T 1 -		
			1 .			١.,	1		1		i			
805-0708-04		SP GRILE	1 1	1	1			1	l i		I	1	- 1	•
910-0668-04	ļ	FRONT GLASS		1	1								-+	
830-0817-15	1	LAMP 14V 80MA	1		1					-	1	1	- 1	
831-0655-05	1	METER	1		1						-		-	
939-0407-04		SPACER	2	2	2	_ Z	2	1	<u> </u>	1	-			
340-3565-04	-	MODEL NAME PLATE TS-811A	1		ĺ	1		i	. 1	ĺ	1	1 1	1	
840-3549-14	N	MODEL NAME PLATE TS-8118	1	1		!	1	i	i			1 :		
840-3550-14		MODEL NAME PLATE TS-811E			1	. 1 1	1		1 1 1		1			
840-3549-14	N	MODEL NAME PLATE TS-8118			1	1	1	1		- i	i	1	ŀ	
841-0140-04	1 "	CAUTION LABEL FUSE 3A	1		1	1	1			į		1 1		
B42-1739-04		VOLTAGE INDICATING PLATE 120V	1 1		ì	1		j				1		
	-	VOLTAGE INDICATING PLATE 220V		1				1				i !	- 1	
842-1740-04		VOLTAGE INDICATING PLATE 240V			1	i i				1		1 :		
842-1741-04 :		VOLTAGE INDICATING PLATE 220V		i		1	!		į	-	- 1	1 1	- 1	
842-1740-04	+	VOLTAGE INDICATING PLATE 240V	1		_	T -	1	1						
842-1741-04	1	CURRENT INDICATING PLATE 8.5A	1			1	-	i		1		1	- 1	
842-2400-04	N	CURKENI INDICATING PLATE 9 04	1 *	4	1 3	1 1	. 1					1 1	i	
B42-2375-14	N	CURRENT INDICATING PLATE 8.0A	1	1					-!					
842-2356-04	i	SWITCH LABEL DCS	1 1	. 4			' ^		1 1		1		- 1	
B43-1044-D4	N	BADGE TS-811A	1 4	1 1				i	1 1	- 1	1		- 1	
843-1039-04	N	BADGE TS-811B	-		-	+	+	+	+	-	-	-		
B43-1041-04	N	BADGE TS-811E TRIQ		i	1		.	1		i	i	1 1	- 1	
B43-1040-04	N	BADGE TS-811E		ł		1 1		1] [
B43-1039-04	N	BADGE TS-811B		-	-		1 1	-						
846-0410-00		WARRANTY CARD	1	1	-		ì	15	1 1	i		1 1	i	
1850-4195-00	N	INSTRUCTION MANUAL (K)	1	Į.			1	1	1	- 1	- 1	! [i	
850-4161-00	N	INSTRUCTION MANUAL (M,W,X)	1	1										
B50-4162-00	N	INSTRUCTION MANUAL (T)			1	1		1	1 1	- 1	i	1 1	1	
850-4161-00	: N	INSTRUCTION MANUAL (M,W,X)				. 1	1 1	.	1 1		i	1 :	- 1	
0,0 4101 00	1			L	L	.		1	1					
C91-0496-05	·	CERAMIC FOR AC 470P	2	2			21 2		1 1	- 1			1	
C91-0647-05		CERAMIC FOR AC 0.01	1	1	1 1	1 1	L 1	-	1 1	1			i	
(41-0041-02					l		1							
D09-0306-04	+	ENCODER DISC ROTOR	1	1	1	1 1	1					;	ĺ	
	1	ENCODER DISC STATOR	1			1 1							- 1	
1009-0307-04	-	DETECTOR MECHANISM UNIT	1	1		1 1				- 1-		1	!	
040-0627-05	-	DETECTOR PRESENTATION CONT.	+	1	-	-		1		-			1	
	i N	13P PLUG (ACC)	1	1	1	1 . 1	. 1	ıi -	1 1	,			1	
E07-1351-05	N	VOLTAGE SELECTOR PLUG	1 *	1					- i			1 1	- 1	
E07-0852-05	-		1					1			1			
E08-0474-05		1	i	î		1 1			; I		- 1	1 1	- 1	
E09-0472-05	1	4P PLUG DC	1 1	1				i	1	ĺ	!	1	1	
E12-0001-15	1	PHONE PLUG (ACS)	1 1	1				: 	1					
E12-0401-15		PHONE PLUG (ACS)							1.	1		1 1	ļ	
E18-0351-05		3P AC SOCKET	1					L Ì	1 1	- 1	j	1 1	- 1	
E29-0463-05		1P JUNCTION CONNECTOR .	1			1 :	1 1	4-	+		- i	+++	3	
E30-1643-15		AC CABLE (ACS)	1	4		. i		1			1	1	İ	
E30-1644-15	1	AC CABLE (ACS)	1		1 3	1	.	i	1 !	i	1	1 1		
E30-1645-05		AC CABLE (ACS)			1		1 !		1					
E30-1647-05	-	AC CABLE (ACS)			1	1	1 1			1	i	1 1	- 1	
		CABLE WITH TERMINAL	1	1		1 :	1 :	L {	1 1	1			- 1	
E31-3049-05	1 N=	CABLE WITH TERMHET	1	1	. 1	1 :	1 :	ul .	1		1	1 1		
E31-3092-05	14.2	GUNER ASID LEGGGE	1			11 :	1 :					T		
E31-3051-05		WIRE'S KIT (ACS)	1						1	i	1	. !	Ì	
E31-3064-00 E40-0774-05	1 *	PIN ASS'Y	1	1		īl :		ī l	1 !	- 1		1i	i	
						- 1								

					D	1571	NCTI	ON	g Q	UANT	ITY					
	NOTE	NAME & DESCRIPTION	011	021			071		T					i	REFERENC	E.NO
PART.NO -05-3022-05	NUIE	FUSE 3A	1		1						1		1			
05-2023-05		FUSE 2A	1 -	1	1	1	1		-	1		1	1	i		
05-3022-05		FUSE 3A	1	1	1]	ļ	1	İ	1	!					
		HEAT SINK COVER	1	1	1	1	1				1		1			
07-0858-03	1	SHIELDING PLATE	5			1.	İ.	1	1.	1	l l		1			
10-1206-04	i *	SHIELDING PLATE	-	6	6	6	6	1	į		1 .		i			
10-1206-04		CONTROL CASE	1					1	1	1	i					
11-0870-12	*		î						1	1	i	1	1			
15-0655-04		BLINDING PLATE	1 1	1		1			1	İ	1	1				
20-0521-04		INSULATING PLATE	: 1					-	+-		-		-			
29-0041-05	*	CAPACITOR COVER	i *	2	1 1	*	-		1			1		i		
	1		5	5	1	100	5	1.	1	1	ŀ.	1		ŀ		
301-0818-04		COILED SPRING	1 2		4	4		-		-	-		-	_		
01-0818-04		COILED SPRING	1 -	1 -					1			1	,	1		
02-0505-05		KNOB FITTING SPRING	3		د	د	د ا		1	1	l .		i	1		
02-0550-04		GND SPRING	1		-			-	+		-	-	-	-		
13-0649-04	2	CUSHION FOR METER	2			2		1	1	1						
13-0642-04	1 8	CUSHION FOR PLL	1	1		1				1]	1			
353-0510-04	12	PACKING FOR PANEL	1	1	1	1	1	_	-	!		-	<u> </u>	-		
				1	1			1		ì			1	1		
HO1-4636-04	N .	CARTON(INSIDE) TS-811A	1						1			1		1		
101-4594-04	N	CARTON(INSIDE) TS-8118		1	L.,					 	-		-			
+01-4595-04	N	CARTON(INSIDE) TS-811E TRIO			1				1.	1	1	ļ	1			
101-4624-04	N	CARTON(INSIDE) TS-811E	1		1	1				ì		1	1			
101-4594-04	N	CARTON (INSIDE) TS-8118		L		1	1			1			<u> </u>			
03-2241-04	N	CARTON(OUTSIDE) TS-811A	1		Т		7	1	T	i	1		İ	l		
103-2217-04	N	CARTON(OUTSIDE) TS-8118		1	1	l .		1	İ	ļ	1		1			
	N	CARTON (OUTSIDE) TS-811E		1	1	1 1		1	1 .	i		L	!	!		
103-2234-04	N N	CARTON (OUTSIDE) TS-811B	-		1	1	1		1		Τ-		1			
103-2217-04	*	PACKING FIXTURE	1	1	1	1				1	1 .	1 .	1.	1	1	
110-2596-02		PACKING FIXTURE	1	1	1 1	1		1	i	! -	1		1	-		
110-2597-02	- 1	BUFFER	1	1	1			1	1	1			1			
112-1315-04		PROTECTION COVER	1						1	1	1		1	1		
120-1425-03			l ī	1		l ī	1 1		1		1	1	İ			
H25-0029-04			1					+	 	1	1 .	1	1			
H25-0105-04		57.5	1 1	î		î	li			i	1	1	١.	1 '		
H25-0103-04		BAG 125X250		i *	1 ^	1 *	1 *		1		1	100	1' '		i	
		FOOT CASE(8)	4	4	4	4	4	-	1	1	-		1	1		
102-0323-05			1			1				1	1	1		ļ	·	
102-0407-04		FOOT CASE(B)	4			4				1	!	1		ì		
102-0403-04		FCOT CASE(SIDE)	2			1 2			+	-	†	 	 	_		
121-2573-04	*	FOOT HARDWARE	5			۱ ۴	5		1	i				1		
129-0407-04		SW GUIDE A (TACT KNOB)	١ ،	, ,	4	4		1	1	1		1	!			
129-0407-04	1	SW GUIDE A (TACT KNOB)						-	$\dot{-}$	+-	+-	+			i	
J31-0141-04		COLLAR MIC	1						1	i	1		İ			
142-0442-05		HOLE BUSH ACC1	1						1	1		1	1	1]	
161-0404-05		FASTNER FOR DC PLUG	1		1	1	1	-	+	+		-	-	_		
161-0408-05		VINYL TIE	1						}				1		1	
161-0408-05		VINYL TIE	. 6	6	6	6	6	1	1	1.	ŀ		1	!	i	
	1			L	1	-	-				ļ					
K01-0410-05		HANDLE CASE(B)	1	1		1	. 1		1			1		1	1	
K21-0768-04		MAIN KNOB	1					1	1			İ		1	1	
K23-0776-04		ROUND KNOB RIT	1		1	1			1			<u> </u>		<u> </u>		
K23-0710-04	-	KNOS	3										1.		1	
K23-0710-04		KNOB UP/DOWN	2	2				1	1				1	1	1	
K27-0467-04		KNOB POWER	1	1		1		L.						1	l	
K29-3001-04		KNOB N8	5	5		5						1	1	i		-
		TACT KNOB RIT.TONE	5				5					Į	1	1		
<29-3032-04																

PARTS LIST TS-811A/B/E

					- 5.7	CTTM	CTIO	N 8	0.0	ANTI	TV				
	ī		011	020				14 6	. 40	100017	' ' '			\neg	REFERENCE.NO
PART . NO	NOTE	NAME & DESCRIPTION	011	021	4	4	0/1	-			-+	-		_	
K29-3032-04		TACT KNOB RIT. TOME	1	1	1	1	1	i	. !			1	- 1		
K29-0771-04		MAIN TUING KNOB	3	3	3	3	3						1	- 1	
K29-0741-04		KNOB													
L01-8266-05	N s	POWER TRANSFORMER	1	1	1	1	1	·				-	_	_	
N09-0646-04		SCREW M4X4	2	. 5	2	2	2			1		- 1		1	
N16-0040-46		SPRING WASHER	1	1		2	2					- 1	- 1	1	
N30-2604-46		PAN HD SCREW	2	5		2	2			 		-		, ,	
N30-3004-46		PAN HD SCREW	5	. 2	2	1						- 1	.		
N30+3010-46		PAN HD SCREW	2	2	2	2	2			1	. 1	- 1	- 1		
N30-3006-46		PAN HD SCREW				6	6		-		-		_	-	
N32-2604-46		FLAT HD SCREW	6	6		6	6			1		i i			
N32-2606-46	1	FLAT HD SCREW	6	6		2	2		1			- 1		ļ.	
N32-3004-46		FLAT HD SCREW				5			-			-		-	
N32-3006-46	1	FLAT HD SCREW	2	2	2 4	4	2					ļ			
N33-3006-41	1	ROUND FLAT SCREW	4	4	4	4	4						- 1		
N33-3006-45		ROUND FLAT SCREW	4					-	-	+			-		
N35-2604-46	1	BIND SCREW	11	11		11				i]		
N35-3004-41		BIND SCREW	18	18					1	1		i			
N35-3008-46	1	BIND SCREW	2	2					-		-				
N87-2605-46		TAPPING SCREW	47	۱	1	1	1 , .			1			i		
N87-2605-46		TAPPING SCREW	1	46				ł	1					- 1	
N87-3006-46	- 1	TAPPING SCREW	10						+	+	-				
N87-4006-46		TAPPING SCREW	3	3					1	1			1	- 1	
N87-3010-41		TAPPING SCREW	6			6			1						
N87-3006-41	1	TAPPING SCREW	6	4					+		-		-		
NB7-4008-46		TAPPING SCREW	1 1							1.]				
N88-2606-46	Į	FLAT TAPPING SCREW	2	2	5					1	1		i	1	
N88-3006-46		FLAT TAPPING SCREW							+	+	-				
N89-3006-45		BIND TAPPING SCREW	4	4	-	-	"		1	İ	1	į '	' l		
	1		1 .	1 1	1	1	1 1	1	1	1	i	i			
SDT1000F		THERMISTER	1						-	+		-			
\$29-2409-05	_	VOLTAGE SELECTOR SWITCH	1			1				i					1
S31-1415-05	1	SLIDE SWITCH	1					1	1	1	i		i l		
\$40-2450-05		PUSH SWITCH	1					₩-	+	-			_		
\$50-1406-05		TACT SWTCH (UP, DOWN)	1.	2							1	1			
\$59-0428-05		KEYBOARD ASS'Y DCS	1			1			-	-			-		
T03-0027-15	1	SPEAKER	.1	1 1		1. 1	11.		1.1	1 .					
T91-0331-05	1.	MICROPHONE (M/W)	110	1 1	1	1	[· .		4	1		1			
T91-0335-05		MICROPHONE (T)	+	 	+	1	1	1	+-	+	-				
T91-0331-05		MICROPHONE (M,W)	1	1 1	. 1					1	1				
T94-0049-05		PLANGER							<u> </u>	-		-	_		
W02-0364-00 W09-0326-05	1	ENCODER ASS'Y	1	1	1										
X41-1580-01	_	SWITCH UNIT	1	1		1 .	i	ĺ	1			1	1		
X41-1580-62		SWITCH UNIT	1		1	. 1			1		1	1	1		
X41-1580-01		SWITCH UNIT		ļ.,		+	1 1	-	+	+	-	-	-	-	
X43-1490-11	-	AVR UNIT	1			1	1		1.	1	}		}		1 ·
X44-1650-11	N	RF UNIT	1: 1				Sec.	1.	1	1.	1.	1	ľ		I.
X44-1650-01	N	RF UNIT		100	1	. 1	1	+	+		+	+	-	-	
X45-1390-11	N	FINAL UNIT	1		.	1		1		ĺ			1		
X45-1390-01	l N	FINAL UNIT		1 :	1	1 .			i	1	1			i	į .
X45-1390-61	i N	FINAL UNIT			ئے	1 1	1	1	!			1	1		<u>i </u>
V#3-1340-01	1 14														

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	W07-	NAME & DESCRIPTION	011	021											REFERENCE NO
PART.NO 45-1390-01	NOTE	FINAL UNIT					1							- 1	
48-1400-01		IF UNIT	1	1	1	1	. 1					ĺ		- 1	
		AF UNIT	1	1	1	1	1								
49-1180-00	N	OIL HALT	1	2.						1 85		ļ. '			The second secon
(50-1990-12	· [N	PLL UNIT PLL UNIT HET UNIT	· 1	. 1	9.1	. 1	1.1	17	. 4			100	}		
(50-1990-01	N	MET THAT	1		. 27				1						
(50-2010-10	N	HET UNIT	1	1	1	1	1					i			
(50-2000-00	N	HET UNIT	1	1 -	1	1						1	'		
K52-1290-60	}	TONE UNIT	1 1		_				1	1			ļ.		
(53-1410-12	N	CONTROL UNIT		1		-				- 2					
x53-1410-22 .	·N	CONTROL UNIT CONTROL UNIT CONTROL UNIT			. 1	3 4	\mathcal{A}	100	1.700	3				li	•
X53-1410-52	. N	CONTROL UNIT	78	100	9.5	1	1			15		ł	ŀ		
x53-1410-62	N	CONTROL UNIT	-	} ``	-	1.7	1	1	-		-	-			
X53-1410-22	, N	CONTROL UNIT	1	1	1	1	1		1				!		
54-1820-11	N	DISPLAY UNIT	1	1	1 1	1 1	1	1							
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TS-811A/B/E PARTS LIST SWITCH UNIT (X41-1580-XX) (-01 : K,M,X -62 : T,W)

					D	IST	NCTI	O N	& QUANT	TTY								
PART.NO	NOTE	NAME & DESCRIPTION	001	061	1062		7 7 7 7	Ţ- <u>`</u>				-	25	ERENC	E.NO			
91-0757-05	NUIE	CERAMIC 0.001 SOV	1001	001	7	 	+	 -		1		-i -						
A1-0/3/-03	1	CERRAIC 0:001 301	-	1	1	l	1	l	i i	l i	i	1 .						
04.1751-05	N	ROUND TYPE CONNECTOR 13P	1	1	1					1 1	i	1 -						
06-1351-05	10	MINI CONNECTOR 5P	2		2	ļ	 	-		+								
	1	MINI CONNECTOR 8P	1		1		1	l	i l	1 1	į.							
40-5042-05	N≠		li		1			l	i i	1 1	į.	[
40-5043-05	_	MINI CONNECTOR 12P	2		2	-	-					-						
40-0273-05	*	MINI CONNECTOR 2P	1	į .				ļ		1 1	1							
40-0573-05	*	MINI CONNECTOR 5P			1 1			l	1 1	1 1	1							
40-0673-05	*	MINI CONNECTOR 6P	2		2		<u> </u>	<u> </u>		-								
40-0873-05	*	MINI CONNECTOR 8P	. 1		1			1	1 1	1 1	i	1						
40-0973-05	*	MINI CONNECTOR 9P	1		1		i	1		: 1	i							
40-1373-05	#	MINI CONNECTOR 13P	1		1		1					_						
1514AB3A100J		METAL FILM 10 OHM 1W	1		1								R ,	. 3				
10 3/10 15		PUSH SW	- 4	 	4	+		-	 	+			S .	3,	10.	1. 12		
\$40-2440-15	1	PUSH SW	1		1		ĺ		1		i			. 4				
40-2441-15		TACT SWITCH	. 2		2		i	1	1	1 1				5,	6			
50-2402-05		TACT SWITCH	5			-	 	-		1 1		+		· le	7,	7. 5	, 9	
50-1412-05		TACT SWITCH			4									1,				
02-0365-05	N	ROTARY ENCODER(RIT)	1		1													
\$\$133	į	DIODE	8		8		1					i	. D	1,	2,	3, 4	, 5.	. 6,
	<u> </u> 		_		-							-						
			_				i T											
				_						1	ŀ	!	l			-		
,																		
	:				-		1					-						
					i		i	1	1		1	<u> </u>						

AVR UNIT (X43-1490-11)

	Т				D	ISTI	NCTI	ON	AAUD 8	ITITY			
PART.NO	NOTE	NAME & DESCRIPTION	011										REFERENCE.NO
CE04W1C100M		ELECTRO 10 16V	4									C	8, 9, 12, 20
CE04W1C101M	1	ELECTRO 100 16V	1				1		1	1		C	, 10
CK4581H102K	1	CERAMIC 1000P 50V	10	L								C	, S, 7, 11, 14, 15, 17, 18
					1	į	1			- 1		1 .	, 24, 25, 26
C90-2004-05	N	ELECTRO 15000 25V		i	14.	1 3	4	1		- 1	1 1	C	, 1, 2
C90-2005-05	N	ELECTRO 1000 25V	2		1.	!	1					C	, 3, 4
C90-0817-05		ELECTRO 1000 16V	1		1		i		i i	i		C	, 22
090-0820-05	!	ELECTRO 470 16V	3		-		ì		1 1			C	, 19, 21, 23
091-0117-05	1	CERAMIC 0.01 50V	1									' C	, 16
C91-1008-05		CERAMIC 0.022 50V	1		100	1		100	1 1]		C	. 13
C91-0119-05		CERAMIC 0.047 50V	1		1	4.5			1 1	-		C	, 6
					1	1	1.		-			-	
DTC114ES		DIGITAL TR	1		1		İ	i	1 1	- 1	1 1	Q	, 12
	1				1		i		;				
E08-0373-05	*	MINI CONNECTOR 3P	1						<u> </u>				
E31-3063-05	*	INSIDE CONNECTING WIRE	1			1 .				1	1		
E40-5044-05		MINI CONNECTOR 2P	1							į			
£40-5045-05	N≍	MINI CONNECTOR 6P	1 1			-	-						
E40-0273-05		MINI CONNECTOR 2P	2		1	1	1			1		1 i	
E40-0473-05	*	MINI CONNECTOR 4P	1		i	1	1	1	1 1				
E40-0673-05		MINI CONNECTOR 6P	1			ļ				-			
E40-0773-05	22	MINI CONNECTOR 7P	1		1	1	1	!		ļ		1 1	
E40-0973-05		MINI CONNECTOR 9P	1		1		1	ļ		ļ	1		
							-					1	
F20-0078-05	T	INSULATING PLATE	1 2				ĺ		l i	i i	! !	1	
F29-0014-05		INSULATING WASHER	2		1	ļ						1 1	
					1	-	ļ						
J13-0055-05		FUSE HOLDER	2		1	i	1	ĺ	1 1				
J19-0306-05	1 .	HOLDER	.1			l ·	İ						
					-	₩	-					1	. 1. 2
L15-0016-05		LOW-FREQUENCY COIL	2			1	Ι.				1	-	, 1, 2
						1				1	1	0	
MTZ6,2J(A,B)		ZENER DIODE 6.2V	1		-	-					: - 	1 10	, 6
MT28.2J(B,C)		ZENER DICCE 8.2V	1		1	1				- (10	/ 3
			.i		ĺ	1					1 1	a	, 10
NJM4558S		10	1		-		 				+	- 4	, 10
	i		1 .		1	1	1 :			-		ive	. 1
R12-1429-05		TRIM.POT. 500 OHM	1			1				İ			, 2
912-1428-05		TRIM.POT. 1K OHM	2		-	-	-			-	+	I R	, 16, 17
R92-0674-05	N	RESISTOR BLOCK 10 OHM 2W	4		1	İ						"	, 10, 17
•			1		ļ		1				1 1	l p	. 1
\$10VB20		RESISTOR BLOCK	1 1		-	-					-	1	
			1		1	1	i			-	1	a	. 8
UPC78M08H	1	10	1 1		1	1					1	0	. 4
U059		DIODE			+	+					+	1-15	
	i	WARTETOR	1		-	1				1	1 1	1 0	, 7
VD1223		VARISTOR	2		1	1				İ	1	0	2, 3
V068		DIGDE			+					-	+	+-+	
	j	D 7 0 0 F	2			1			i			D	, 8, 9
188133	! !	3001 D	'			1				-			* ** *
221121212		TR	2		 		 			-	 	q	, 1, 5
2SA1012(Y)		TR	1		1					İ		ا	. 7
2\$A1048(Y)	1	TR	3							i		ا	2, 9, 11
2SC1959(Y)		TR	3		+		 			+-	1	i a	, 3, 4, 6
		T.K.	1 2		1	1			1 1	1	1	1 "	
25C2458(Y)	1 1		1 1		1	1	1				1 1	i l	

PARTS LIST TS-811A/B/E

RF UNIT (X44-1650-XX) (-01: M,T,W,X -11: K)

	,	50-XX) (-01 : M,T,W,X -1)			D 1	STIN	CTIC	N 8	<u>Q</u> l	IANTI	TY_				4
	NOTE	NAME & DESCRIPTION	001	011											REFERENCE.NO
PART NO	NOTE	CERAMIC 100P SOV	2	2									1		C , 29, 30
C455L1H101J		CCRAITE	1	1	1	l f					1				C , 16
C45CH1HOR5C		CENAMIZO	2	2			l i				1		ļ.		C , 10, 28
C45CH18050C		CLRAITE	2	2						-			-		C. , 38, 42
C45CH1H060D .		GERANIZA		- 4	30	ľ., .	.33	1			1. 1				C . 5. 36. 40. 41
C45CH1H100D	100	CERAMIC 10P 50V	6		1 "		100				1 .			-	C , 17
C45CH1H120J		CERAMIC 12P 50V	1	1						-	-				C , 3
C45CH1H330J		CERAMIC 33P 50V	1	1		i	l i				1 1		- 1		
C73ECH1H030C		CHIP CAP. 3P 50V	1	1			li				1 1	1	. 1		
		CHIP CAP. 33P 50V	2	2	1										C , 1, 2
C73ECH1H330J		CHIP CAP. 100P 50V.	. 3	-	1								4.		C . , 6, 12, 19
C73ESL1H101J	1.00	CHIP CAP. 100P 50V	12.	. 3	1 .		. !				1	1	. 1		C . 3, 12, 19
C73ESL1H101J		FLECTRO 10 16V	1.1	1								1 1			C . / 26
E04W1C100M			14			-	-		-						C , 4, 8, 13, 18, 22, 23, 21
K4581H102K	1	CERAMIC 1000P 50V	7.4	1 "				ĺ			1 1	1 1			31, 32, 34, 35, 37, 39, 43
	ĺ			_	1			1				1 1			C , 7, 9, 11, 14, 20, 21, 24
K73EB1H102K		CHIP CAP. 1000P 50V	9	9		-			-	-	-	-	-		, 25, 33
	1		1			1	1		1	1		1			
05-0031-15	1	TRIMMER 10P					1	l		1	1				TC / 2
	1	TRIMMER 4PF	2	2		1	1		L	1		1			TC , 1, 3
05-0308-05		Intended	1				ī				1				1
	1	RF COAX. CONNECTOR RAPHET, DO	4	4	.1	1		į	1	i	1 :	1			1
E04-0154-05			1			1	l		1	1	1	1	j l		
E31-2064-05	1	CONNECTING WIRE (A)	1			-	-			 	-	—	1		
E31-2089-05		CONNECTING WIRERA	1	1		1	1			I	1	l -	1		1
						t.		1	1.		1	1	1	ŀ.	L , 2, 3
19-0309-05		WIDE BAND TRANSFORMER	2			1	1			-	1	-	-		
34-0824-05		COIL 3.5 2.5T	1			1	ł				1	1	}		
L34-0825-05		COIL 2.5T	1	1		1	i		1	1	1	I			L , 18
		COIL 3 9.57	2	2			1	[1		1				L , 4, 19
L34-0908-05			2	2		7	1	1 1		1.	1	1			L , 9, 11
L34-1052-05		1001	1		1	27	ŀ	100	100	1		1			L , 10
L34-1083-05	- 1	COIL 1.25T	2			1.0	1	1 . "	1.	i					L , 15, 17.
L34-2038-05						+	-	-	+		+	1	_		L , 1
_40-1091-03		INDUCTOR 1 UH	1		1	1		1	ł		ļ	1	-		12
L40-1092-14	1	INDUCTOR 1 UH	1			1	1		1		ł		1	i	1 , 16
L71-0248-05		MCF 30.265MHZ	1 1			1				1					
L79-0649-05	N	HELICAL	3			1			1	ì	1		1		
	N	HELICAL BLOCK 430-450MHZ	1	3	1 .	1	١.	1	ì	1	1	1	ĺ		L , 5, 6, 7
L79-0658-05	146	HELICAL	1 1			1		1	1	1	1	L	L		L , 13
L79-0619-05		HELICAL BLOCK	+	1				-							L , 13
L79-0659-05	N		1		ì	1		1	1	1	1		1		L , 14
L79-0620-05		HELICAL	1 4	1 1	1	1	1	1	1	1	1	1	1	1	L , 14
L79-0660-05	N	HELICAL BLOCK	+			+	+	+		+		-	+		L , 2.0
L92-0110-05		FERRITE CORE	1	1 3		100	1 :		1	1	1:	1 .	1		17 7 77
			d: .	15.0	1	1		1.		1	1	İ	1 .		0. , 4, 5
MA856		DIODE	2		1	1	1	1.	-	-	100	10.0	1	-	
MA856	+	DIODE		1	1	1	1		1	1	1	1	1	ļ	1 - 1
	1	VARISTOR	1	. 1			1			1	İ		1		D , 2
MV13	1	TANTALAN	1				1	1		1		L	1		
		LATORE :	1	1	1	100	1		1	T	1 -	-	1		D , 1
ND487C1-3R		DIODE	1	3.1	130	100	1.	1 :	140	1	1				
,)	1 173 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1.11			1	1	1 .	P-1	1	-	1	1	-	VR , 1
R12-0433-05		POTENTIOMETER 200 GHM	1 1	1 3	-	1	-		-	+	+ -	+	+	-	
			1		.1	1	1		1	1		1		1	0 , 3
188133		DIODE	1			1	1	1	1	1	1	1	1		
18897	1	DIODE	1	1	11	1	1					-	-	-	D , 5
19941	-					1	1	1	1	1		1	1		
	1.	TR	. a	: 1	d in	de la	1 .	1	1 .	1	L -	100	1		Q / 1/ 2
22C2O59	l'					125	15	120] -	1	Bir.	1.0	1		9 , 5
25C2458(Y)		TR				47.00	+	7	1	1 - 11	1	+	1		9 , 3
25C2570A	1	TR	1		-	1	1	1	1				1	1	9 , 4
2SC2762	-	TR	1 2	: 1	Į.			1	1	1	1	1		1	Q , 6, 7
35K129(5,T)	- 1	FET	1 2	11 2	≥i	1	1	1	1	1	1	1	1	1	154 4 94 (

FINAL UNIT (X45-1390-XX) (-01 : M,X -11 : K -61 : T,W)

			_			ISTI	n C I I C	116	a (2)	UANT	1 1 4	,	1		REFERENCE.NO
PART.NO	NOTE	NAME & DESCRIPTION			061				-	_	-	-		-	C / 16
C45CH1H050C		CERAMIC SP 50V	1	1	1						1				C , 35
CC45SL2H050C		CERAMIC 5P 500V	1	1					1	1	ŧ	1			C , 35
C45CH1HOR5C		CERAMIC 0.5P 50V		1	1				1						C / 33
C45 SL2H030C		CERAMIC 3P SOOV	3	3	. 3	1 1 1		1	1,500	12.	12.	100	1.0	1 4	C , 2, 4, 32 C , 9
		CERAMIC 4P 500V	1.4	130	100	18 19	24	1	12,78	130	10.5	0.18	1000		C 2 9
CC45SLZHO4OC		CERAMIC 7P: 500V	1	1 1	1		387,		1:11	F	F	<u>. </u>	1		C , 11
C45SL2H070D		outinities.	1	1	1				1						C , 6
CC45SL2H12OJ		CENTAINE	1 7	ī	1	1				1	1	1			C , 36
CC45SL1H101J		CERRITO	1	1						1	1	1	1	1	C , 34
CC73FCH1HOR5C		Cital Chi		2						+	ļ		1		C , 24, 26
CEO4W1E22CM		ELECTRO 22 25V	7		. "	[.	1 :		l .		l .		l .	1	C , 12, 14, 15, 22, 23, 25,
CK45B1H102K		CERAMIC 1000P 50V	1 3	1	łα".		1	:	18.00	Serv	1.5		11.1	1	C - 17, 18, 19, 20, 21, 33
CK73EB1H102K		CHIP CAP. 1000P 50V	6	6			1		1	-	-	-	-		C , 10
CM73F2H16OJ		CHIP MICA 16P 500V	1			Į.			1	1		1	1	1	
CM73F2H15OJ		CHIP MICA 15P 500V	1	1			1	1	ı	ŀ		1	1		
CM73F2H22OJ		CHIP MICA 22P 500V	1 1	1	1		l			·					
CM73F2H040C	_	CHIP MICA 4P 500V	1	1	1:1	1								1	C . 1
CS15E1VR47M		TANTALUM 0.47 35V	1 1	1		1	1.	l	1	1		1	1	1	C , 27
		ELECTROLYTIC 220 10V	1	- 1	1	1	1			1	L.,	1	<u> </u>	1	C , 29
C90-1253-05		ELECTRO 220 16V	5	2	2	T	T		T	T					C , 30, 31
C90-0871-05		EEECING	1 1	1		ł	1	l	1	1	1		1	1	C , 13
C90-0838-05		ELECTRO 1 50V	1 ^	*	1 *										
E04-0161-05		UNF RECEPTACLE	1	1	1	1			1		1	Т		1	
		N TYPE RECEPTAC		1 -	1	1	l		1	1			!	l	·
E04-0162-05	N		1 1	1		1	1	ı		1	1	}		l	
E29-0440-14	_	GND WAFER	+	1	1 -	1	1		1		1	1			
		HEAT PINE	1	1	1		1		1				1		
F01-0917-05		HEAT SINK	ı î	l î		1			1	1	1	1	1		
F09-0405-34		FAN	1				1	-	-	1		1		1	
F20-0078-05		INSULATING PLATE	1	1		1		}	1		1	l	1		1
F29-0014-05	1	INSULATING WASHER .	1 1	1 1	1 4			1	1		1		1		i .
			1	1	1	+	-	-	-	-	+	+	1	1	
G02-0549-04	"	SPRING FOR MOTOR	1 1	'	1 *	1			1		1	1	1		
	1		1	1	1	1				1	1	1	1		L , 5
L34-1113-05		CHOKE COIL 1.ST				+	 		-	1	+			-	1 2
L34-0908-05	l T	COIL 3 9.ST	1		1	1	1	l	i	1	1		1	1	1= : .
L34-1032-05	1	COIL 3 3.5T	1	1			!	l	1	1			1	1	
L34-1019-05		COIL 3 2.5T	1	1					<u></u>		↓	1	-	-	L . 3
L34-1017-05	-	COIL 1T	2	2	1		i		1	1	1		(1	L , 1, 6
	1	INDUCTOR 1 UH	1	1	1		1	l	1	1	1	1	1	1	L , 7
L40-1092-14	1	Inductor	_	1		1				<u> </u>		L			L
	-	DIODE	1	1	1	1	1			T	1	1		T	0 , 2
MI308			l i			1 .	į.	i	1		ŀ	1	1	1	0 , 1
M I 407		01006	li	l î			İ	[1	· ·	1	1	1	l	0 , 1
M57745	N	POWER MODULE	+ *	+ +	+	-		-	+	-	\vdash	1	_	1	
	1		1	1	1	1					1	1	i		VR , 2
R12-0541-05	1	TRIM.POT. 100 DHM	1 1			1	1	l	1	1	1	1	1	i	VR , 1
R12-5517-05	-	TRIM.POT. 100 OHM		1	+	-	 		 		+	+	 	 	***
			1 .	1	1 1	1	1		1	i	1	1	Ι.	Ι.	TH , 1
SDT1000F		THERMISTER	1	1	1 1	Ī		Ι΄	1	1	1	1.	1		
	ĺ.		+	<u> </u>	1-	 - -		⊢–	-	 		+	+		
T42-0302-05		DC MOTOR	1 1	1	1	1			1		1			1	
	1		1	1	Ι.	1			1						0 / 5 / 0
188101	ĺ	DIODE	4	4	4				·	ļ	ļ	 	-	1	D , 4, 5, 6, 9
155133	-	DIODE	1	1	1					1	1	1		1.	D , 7
+ 3 3 5 3 3	1				1	Į.		-				1 .			
7044047(V)	Į.	TR	1.1	1	1	1		1111					1	^	Q , 2
SA1012(Y)			1	1	1	1	-				1		T	i	Q , 4
25A1048(Y)	1	TR	l î	1		1	1	1	1		İ	[1	1	Q , 3
2SC1815(Y)		TR	1 1	1	li		1	l	1	1	l	1	1	!	Q , 5
250717	1	TR.	4 4	فسل											<u> </u>

TS-811A/B/E PARTS LIST

IE HART	(X48-1400-01)
I CUMII	1 A 40-1400-01/

	1 !				ļ		U	1311	NCTIC	/19	ୟ ସଧ	ANTI				
PART.NO	NOTE	NAME	& DESCRIPTIO	N .	001	011									_,	REFERENCE.NO
C45CH1H150J		CERAMIC	15P 50	V	5			\Box			1		1	1	C	, 52, 57, 90,121,190
C45SL1H220J		CERAMIC	22P 50	v	3			1	i :			- 1	-			. 1.118,185
C45CH1H100D		CERAMIC	10P 50	V	1			1	: 1		1 1	ļ	İ		' c	-119
C45SL1H470J		CERAMIC	47P 50	V	3		-		-					1.	C	, 69,106,107
C45CH1H0R5C	1	CERANIC	0.5P 50	v	2				1 1			i	- 1		I C	7, 31
	1	CERAMIC	18P 50		1			1	1		1	1	- 1	- 1	C	, 18
C45CH1H180J		CERAMIC	120P 50		1		-	+			1				C	,165
C45SL1H121J		CERAMIC	22P 50		l î				1 1		1 1	- 1		1	1 c	.114
C45CH1H220J		CERAMIC	0.5P 50		2						1 1		1	1	l lc	, 8,115
C4SCH1HORSC	-			00V	1			 							ic	.122
C45SL24470J	i	CERAMIC	2P 50		1						1	- 1]	1	C	,103
C45CH1H020C		CERAMIC			2				1	:	1 1			٠ ا	-1 16	3, 37
C45CH1H330J		CERAMIC				_	·		!		1				- C	,194
C45SC1H101J		CERAMIC	100P 50		1	Ì	ì	1	1						ic	, 92
C45CH1H030C	1	CERAMIC	3P 50		1	Ī				i	!!				i	. 15
C45CH1H121J		CERAMIC	120P 50		1			1			1	;		-		
C45CH1H050C		CERAMIC	. 5P 50		1	i		1	i.	}	1		- 1	ļ	C	, 65
C455L1H470J		CERAMIC	. 47P 50		4		100	1	1		1		. 1		C	, 54,101,108,126 .
C45SL1H221J		CERAMIC	220P 50		1	L		1					1		C	. 16
C45CH1H070D		CERAMIC	7P 50		1		1							1	C	, 91
C45CH1H100D	i	CERAMIC	10P 50	V	7	1					1 !				C	, 19, 24, 25, 48, 61, 74,
C45C41H080D	i	CERAMIC	8P 50	ν	1	l			1		i !				1 'C	, 30
C45UJ1H020C	-	CERAMIC	2P 50	V	1		1	1							C	, 14
C45UJ1H100D	j.	CERAMIC	10P 50	ν	1 1	١.		ŀ		ŀ				- 1	C	, 13
E04W1H010M	į	ELECTRO	1 50	ν	10	1	1 '	l	100	į	1	- 1	- !		C	, 11, 38, 77, 80, 82, 83,1
EGENTHOTON	-	ECCCINO			1			1	-							,163,172,174
	1	ELECTRO	2.2 50	n v	1				1 1		! !	1		1	c	,187
CEO4W1H2R2M	1	ELECTRO	4.7 25		6				1		1 !	- !	- 1		1 c	, 81,155,162,181,182,188
EO4W1E4R7M	-		10 16		3	 	1	+	1	 	-				C	, 99,130,173
E04W1C100M		ELECTRO	22 16		1 1	i	ľ	1 .					- 1	: I	l c	180
E04W1C220M		ELECTRO	47 10		3		ļ.	100			1 1		ļ	.	ľ	, 79,171,183
CEO4W1A47OM		ELECTRO	220 10		1	-		+	+	-	-			_	C	182
CEO4W1A221M		ELECTRO				1		1	1	ŀ				- 1	lč	131
CK45B1H331K		CERAMIC			1 1	1	}	1	1	1	1 1	1	i	- 1	ı c	,179
CK4581H471K		CERAMIC	470P 50			-		-		-	-	-			C	, 4, 5, 9, 12, 42, 94,1
CK45B1H102K		CERAMIC	1000P 50	V	8	1	1.		1		1 1		- 1		1 15	.140
	Í					Į.			1				- 1		c	, 70, 87
CK45B1H331K		CERAMIC	330P 50		2		-		-	<u> </u>		-			- -	47,110,153,177
CK45B1H471K		CERAMIC	7141	V	4		ì		í		i i			i	l c	, 47,7110,133,177 , 88
K45F1H103Z	į	CERAMIC		٥v	1		1		ł			i I		- 1		
CK45F1H103Z		CERAMIC	0.01 50		6	L			1							, 29, 43, 85, 89,138,144 ,175
CQ92M1H332K		MYLAR	3300P 50		1		1		1				- 1	į	C	
CQ92M1H103K.		MYLAR		vc	1	- 5	l.	Ι'	1	1				ì	C	,176
CQ92M1H153K	-	MYLAR	0.015 50		1	L	1	1	1	<u> </u>	1	l i			C	,160
C092M1H223K		MYLAR	0.022 50	ΟV	1 2			T					i		C	,169
C392M1H473K		MYLAR	0.047 50	οv	2		į		1		i	1			C	, 78,161
CQ92M1H683K	1	MYLAR	0.068 50	οv	2		1		1	! .					c	,166,170
CS15E1VOR1M		TANTALUM	0.1 35	5 V	1					1		- 1		- 1	i C	-178
S15E1VR47M	ĺ	TANTALUM	0.47 35	5 V	1 1		130	: 1		ŀ					l c	, 39
	1	TANTALUM	1 25	5 V	2	1 1	1	1 '			1			1	C	71,133
S15E1E010M		TANTALUM		6 V	1		\vdash	+	1	†	+				, C	, 44
S15E1C2R2M	1	TRIMMER	20P		1	1	Ι.	1	1		1			1	T	
005-0030-15			10P		2	1		1					1	-	T	
05-0031-15		TRIMMER	0.0047 50	DV :	1	1.77	+	+	-		+				c	-167
C91-0667-05	1	CERAMIC		DV .			L	1: .	1				l l	į	C	2, 10, 17, 67,1:2,137
C91-0117-05		CERAMIC			11	15.	13.	100	1	1					1 0	, 33, 49, 56, 62, 63,102,1
C91-1008-05		CERAMIC	0.022 50	DV	111	-	1	1.	+	-						,125,146,149,150
			0.01 50	οv	12	1	-	1	1	i	:	: :		i	lic	, 26, 27, 35, 36, 46, 68,
		'CERAMIC														

						ISII	NCTI	ON :	୫ ଉଧ	ANI.	LIY	,	,		DESCRIPTION NO
PART.NO	NOTE	NAME & DESCRIPTION		011										\rightarrow	REFERENCE.NO
091-1008-05	1	CERAMIC 0.022 SOV	32											- 1	C , 20, 21, 22, 34, 10, 53, 54 , 55, 58, 60, 72, 13, 75, 76
	i								1						, 84, 93, 95, 96,1(0,104
C91-0119-05		CERAMIC 0.047 SOV	3	1		100			1					- i	C ,109,113,142 C , 28, 66
C91-C457-O5		CERAMIC 0.022 50V	2		. 5 ^	1.		1. 1	1 }	ď.		1	. !		C , 51, 59,120,124
C91-0457-05	1	CERAMIC 0.022 50V	4			-	-	1				1			C ,192
C91-0085-05	N	CERAMIC 0.022 SOV	1	1	i		1	ł	1 1						C ,164,184
C91-0667-05		CERAMIC 0.0047 50V	2			ļ	1	1	1 [1			C , 40
C91-0119-05		CERAMIC 0.047 25V	-	1	!	+-	+	-				-			C , 40
DTC114ES	14.	DIGITAL TR		÷	<u>.</u>										a , 19
E04-0154-05		RF COAX. CONNECTOR RA, HET, DO	2			Т	Т							- 1	
E23-0512-05		TERMINAL 1P	4				1		1			1	!!	- 1	
E40-0273-05		MINI CONNECTOR 2P	6						L	-		-		-	
E40-0473-05	*	MINI CONNECTOR 4P	1		1	1								i	
E40-0573-05	*	MINI CONNECTOR SP	4			1	1	1	1						
E40-0673-05		MINI CONNECTOR 6P	1			-	1		-			1			
E40-0773-05	*	MINI CONNECTOR 7P	1			1						:		- 1	
E40-0973-05	*	MINI CONNECTOR 9P	2												
G02-0535-04			3		1										
L30-0281-15	1	IFT'	4			!	-	ļ	1			-			L , 13, 14, 15, 18
L30-0289-05		IFT	5		}		1	l	1			1	l i		L , 6, 7, 20, 21, i2
L30-0503-05		IFT	3				1	l				1			L , 25, 27, 33
L30-0504-05		IFT	1												L / 32
L33-0681-05	N	CHOKE COIL 6.8 UH	1		1		1	1	1						L / 5
L34-2231-05	N	TUNING COIL 30MHZ	1		-	1	1	J						ı	L / 8
L34-2038-05		TUNING COIL	4		ļ.,				- 1					_	L , 9, 10, 11, 24
L34-2041-05		TUNING COIL	3											- 1	1, 2, 3
L34-2045-05		TUNING COIL	3		!	1			1 1					- 1	23, 28, 29
L40-1501-03		INDUCTOR 15 UH	1		!	1						-		-	L , 26
L40-1511-03		INDUCTOR 150 UH	2	1	ĺ	1	1	1	1 1	i	1	1 :) }		L , 17, 19
L40-1021-03		INDUCTOR 1 MH	3	}	i	ļ	1	1		i	i				L , 16, 35, 36
L40-1011-16		INDUCTOR. 100 UH	1			1									L , 38
L40-1011-17		INDUCTOR 100 UH	1			-			i 1						L , 30
L40-1011-14		INDUCTOR 100 UH	1	1	1	1		ł						- 1	L , 37
71-0249-05	N	XTAL FILTER 10F22S	1			1	1						\sqcup		L , 12
L72-0342-05		CERAMIC FILTER CFV455F	1		-	1	-	1	1						L / 31
L77-1254-05	N	XTAL 13.6570MHZ	1		١.		1			1	i				L / 4
L79-0446-05		CERAMIC DISCRI CFY455S	1	-		-		-	-			-			L , 34
MC911		DIODE	2						!	i					0 , 27, 28
	į	DIODE	1 4		1		1								0 , 9, 24, 29, 32
MC931	+	21000	 	 	1	1	1								
ND487C1-3R		DIODE	1												0 , 16
R12-0421-05	+	TRIM_POT. 100 OHM	1												VR , 8
R12-1429-05		TRIM.POT. 500 DHM	1				1								VR , 6
R12-1430-05		TRIM.POT. 3K OHM	1				1	L	1				ļ	i	VR , 2
R12-3443-05	1	TRIM.POT. 10K OHM	3		1		1		1		-			i	VR , 1, 4, 7
R12-3450-05	N	TRIM.POT. 20K. OHM	1		L.	1	1		1.1			1	li		VR , 9
R12-7408-05	N	TRIM. POT. SOOKOHM	. 2	1.2	_	1	<u> </u>								VR , 3, 5
TA7302P		10	2												Q , 41, 44

PARTS LIST TS-811A/B/E

				~	DI	STIN	(ĈŤIC) N (. Qt	JANT	TY			
PART.NO	NOTE	NAME & DESCRIPTION	001	011			1							REFERENCE.NO
PCS77H(E,F)	MUTE	IC SECOND	1	1										9 , 46
PC4558C		ic	1											Q . 47
N60	-	DIODE	6	3					, ,					D , 10, 11, 12, 13 D , 1, 5, 18, 30, 33, 39
S S 1 3 3		DIODE		200		30	1	3.1	ς		.		- 1	D , 1, 5, 18, 30, 33, 39 D , 2, 4, 6, 7, 8, 15,
S S 1 3 3		DIDDE	17								-			, 21, 22, 23, 25, 26, 31,
00.55	-												į	, 35, 36, 37
S 1587		DIODE	1							ļ				0 , 14
S1587		OLODE	2			W. s.	%		1.50					0 , 3
S2208	1	VOLTAGE VARIABL	2		1.00	9	1.8				: · i	į	٠. ا	0 , 2, 3
12-102-2		THERMISTER :	1					· ·				_	-	0 1
12-103-2		THERMISTER	1											
CS2458(Y)		•	ļ]	L .									Q , 56, 58, 59
2 SA1048(Y)	-	TR	9	1	1									Q , 11, 12, 13, 15, 16, 17,
.46,040(()						j		i.						, 27, 60 Q , 54, 57
SC3113(B)		TR	2							-				Q , 1, 2
SC2668(Y,O)		TR	2		1							i		Q , 4, 36, 38, 40, 48
2 S C 2 6 6 8 (Y)	İ	TR	5									İ	l i	9 , 29
25C2240(GR)		TR	1		-	-	-			-	-			9 , 3, 9, 14, 23, 24, 28,
25C2458(Y)		TR	23									,		, 31, 33, 37, 39, 42, 43,
				100	1:	1	44		4.5%	1.				49, 50, 51, 52, 53, 55
		1	-	-	1	-	-	1		-	-		-	Q . 35
25K125		FET	1 3						1					9 , 10, 25, 26
2 S K 3 O A (O)	-	FET	1 2		1]	1		Q , 6, 7
25K161 (GR)		FET	1 2		+	 	-				-			 - - - - - - - - -
		FEType 1 Addition to the				٠.								Q · , 5, 8, 20, 21, 22, 32
38K73(GR) :	i	FET	1		1 .							·		2 , 34
35K73(Y)		I FE;				i					ī			
	1				1			ì		ĺ				
			+	-	-	-		-	-	-	-	-		
										1				
			+	-	-	-	-	-	-	-	-			
						İ							1	
		<u> </u>	1	+	+	-	+	+	1	-	1-	-	-	
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			+	-	+	-	-	-	-	-		-	-	
							1			1.				
			+	+	-	-	+	-		+		-	-	
				İ										
	-		+	-	100		1	-	-	-	-	+-	1.	
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ΑF	UNI	T (X49-1	180-00)
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						U	12:1:	NCTI	UN	<u> </u>	JANT	111			,		ENCE.NO
PART . NO	NOTE	NAME & DESCR	IPTION	000			_					<u> </u>			-		
C45SL1H390J	1	CERAMIC 39P	50V	1				1	1	1	l		١.		1		2, 3, 45
C45SL1H101J		CERAMIC 100P		3	l			1					١,		1		0, 21
E04W1E4R7M		ELECTRO 4.7	25V	2			٠.						ļ				6, 8, 9, 10, 17, 40, 5
E04W1C100M		ELECTRO 10	16V	. 7	10.5		120		3.0			18.	100	1.0	1 4	C	7
E04W1C22OM		ELECTRO 22	16V	1.1	1,50	100	27.7	1	1.5	١.	1000	18 39	N 1 18	18 N.	1 85	160	
E04W1C220M		ELECTRO 47	10V	5	ļ				1		1.0			·	1	C -	5, 22, 25, 46, 56
E04W1A470M		ELECTRO 100	10V	1	$\overline{}$						1	į				C , 4	
	į.	ELECTRO 0.47	50V	1 1	l l		ł	1	1							C , 2	
E04BW1HR47M	1	ELECTRO 1	50V	18	i	Į.		1							ļ	C /	4, 11, 13, 14, 15, 16, 1
E04W1H010M		ELECTRO 2		1		1	100	27.2.2	1			1:					9, 26, 28, 29, 35, 37, 3
				l		13	13.	194	Det.	1	100	1 '	1	1755	1.		1, 42, 48, 53
	1	ELECTRO 1	sov	2		1 1	18	1	135	3. 8	1.1	140		15.7	1551		3, 24
E04BW1H010M		CFEC INC		1		1	_			_	-					C / 4	
K45B1H471K	1	6 Publica A		li	1	1	l						1	ŀ	1	C / 3	11
K45B1H561K				5	-	1							1		1	C / 3	6, 39, 44, 61, 63
K45B1H102K		CERAMIC 1000		1			 	-	-			_	1		1	C , 3	3
K4581H152K	İ	CERAMIC 1500		li		1	1.0	l			1				١.	C - 1	
Q92M1H332K		MYLAR 3300		1 1		1			1				1	ļ	1 :	C / 3	14.
Q92M1H103K		MYLAR 0.01		4	-		 		_				-		<u> </u>	C , 5	4, 55, 57, 58
Q92M1H123K		MYLAR 0.01		1						ĺ	ì		1			C , 5	
Q92M1H104K		MYLAR 0.1	50V	1 1		1		1		ĺ						c , s	9
S15E1VOR1M		TANTALUM 0.1	35V					 				 			-	C 6	0
S15E1C3R3M		TANTALUM 3.3	16V	1		1	ŀ		1	11.7	14.1			1		C . 5	
90-0882-05		ELECTRO 220	25V	1	[1		3135	100	95.	M /	1 "	17	1		C 4	ā
90-0820-05	ļ.	ELECTRO 470	.16V	1	-	·	1	122			<u> </u>		-	-	-		
,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					ł			1	1	l		1		1		İ	
140-0373-05		MINI CONNECTOR 3P		1	1		1		1	ĺ		į		ł	1	İ	
40-0473-05		MINI CONNECTOR 4P		1				<u> </u>	<u> </u>			ļ			ļ		
40-0573-05	*	MINI CONNECTOR SP		1			1			l		1				i	•
E40-0473-05		MINI CONNECTOR 6P		1	l	ł			1	l	ļ.		1	1	1		
E40-0773-05		MINI CONNECTOR 7P		1	l		<u> </u>				<u> </u>	l					
E40-0973-05	*	MINI CONNECTOR 9P		1					T]		1	
E40-09/3-03	1 -	HIRI COMMEDIAN		1			l	l		ł		1				ĺ	
		10		1				1		l						Q / 1	.1
MB3713	-	D100E		2				-		1	-						2, 8
MC911	-	30010		2					1 .		Ŀ			1.5	1	0 , 1	11 /
MC921	!	01002					1		1			t	Į.		·	1 1	
	+	16		2												Q ,	4, 9
VJ#4558S	i	PAN HD SCREW		1		1	l							l			
430-3004-46		PAN HU SCREW		1 -							İ		1	l	1	1	
	-	TRIM.POT. 10K	OUM	2			-								-	VR C	1, 3
112-3443-05				1			1 .				Į.	1.	ŀ.	[.	l.	VR -	4
R12-4413-05				1 1			:					1 .	F .	100			2
R12-5420-05	·	TRIM.POT. 100K	Unn	+	-	-	-	-	-	-	ļ	<u> </u>		-		<u> </u>	
	_			1		1	1	1	1	1	ĺ	1				a ,	5
UP(1158H2		IC		1 1		1	1							ļ			-
				+				 							 	0	5
1 N60		DIODE		1				1	1				}	2.	1	0 / 1	0
1 55133		DIODE		1		1	:	}							1 :		1, 3, 4, 6, 7, 9
\$\$133		DIODE		6	<u> </u>		-	-		ļ	-		-			· · · · ·	27 37 47 67 17 7
													1			۵ ,	2, 13
25A1048(Y)		TR		2				1		1	1				1		3, 7, 8, 10, 12, 14, 1
S(2458(Y)	1	TR		8		ļ				-							
. 345430117	1									V .				12.		- 1	
25(2459 (GR)	l	TR ·		1	٠.	× 1		18C	1	36		1 3	De r	Ž.	13.77	Q	
2 SK30A (GR)	1	FET		1	+ %		1	10 S	12	. yez.	142		120	1000	-	Q ,	0
: SKJUNTOR /	-	· - · · · · · · · · · · · · · · · · · ·		T													
	1			1	I	1								1	1		
	4			1	I	1	ì	1	1	1	i	l .	1	1	E	1	

TS-811A/B/E PARTS LIST

PLL UNIT (X50-1990-XX) (-01 : M,T,W,X -12 : K)

								STINCT	ION	g 0.	JANTIT	Y			
PART.NO	NOTE	NAME	& DESCRIP	TION	001	011	012								REFERENCE . NO
CC45CH1H060D		CERAMIC	68	507	1								1	C	
CC45CH1H060D		CERAMIC	6P	50V	Ī		1	- 1		!!!		- 1		Ç	
CC45CH1H010C	į	CERAMIC	18	50V	1		1			!		. i	l	C	
CC45CH1H070D	1	CERAMIC	7P	50V	1		1						1	C	,110
CC45SL1H470J		CERAMIC	.47P	50V	4	1	4		1			- 1 .	1	C	, 14, 32, 89,161
CC45CH1H050C		CERAMIC	5 P	50V	2	1 1	2		1	1		1	1	C	. 66,152
CC45CH1H060D	_	CERAMIC	6P	50V	1		1			-				C	,120
CC45CH1H1000		CERAMIC	10P	50V	2		2		i	1 1	1			c	.137.158
CC45CH1H1B0J		CERAMIC	18P	50V	3		- 1							C	
CC45CH1H18OJ	-	CERAMIC	18P	50V		-	4			-			1	C	
CC45CH1H080D	į l	CERAMIC	8P	50V	2	1	2	- 1	1			- 1		l ic	
CC45CH1H080D		CERAMIC	100P	50V	2		2	- 1	1			1	1	' lč	
CC45CH1H15QJ	+	CERAMIC	15P	50V	1		1		+-	-			+		
CC45SL1H221J		CERAMIC	220P	50V	i		1					1	;		
CC45CH1H100D		CERAMIC	10P	50V	1	1	1			1	1		1	l ic	
		CERAMIC	27P	50V	1		1		-				+	C	
CC45UJ1H27OJ		CERAMIC	330P	50V	1	1	1		1 .		1	-	1	C	
CC455L1H331J	1.		15P	50V	i	1 1	1		-	. i		1	ì	C	
CC45CH1H15OJ		CERAMIC CERAMIC	18P	50V	- 2	1	2	-		+	+		+	Č	
CC45CH1H18QJ			0.5P	50V	3		٤ ا	!	j					l c	
CC45CH1HORSC		CERAMIC	0.58	50V	3	1 1	2		1	1			J	l c	
CC45CH1HORSC	-	CERAMIC		50V	2	1							+	Č	
CC45CH1H220J		CERAMIC	22P		4		2		i	1			1	Č	
CC45CH1H22OJ		CERAMIC	22P	50V	- 4		- 1				1		1	C	
CC45CH1H22OJ		CERAMIC	22P	50V			3		+		<u> </u>		-		
CC45CH1H030C		CERAMIC	3P	50V	4		4	-	ı			1	1	C	
CC45CH1H270J		CERAMIC	27P	50V	1		1						-	C	
CC45CH1H040C		CERAMIC	4P	50V	1 1		1		-				-		
CC45CH1H27OJ	1	CERAMIC	27P	50V	3	1	3			1			i	C	
CC45CH1H330J	:	CERAMIC	33P	50V	1 2		2	1		1	1 1		1 .	C	
CC45CH1H330J		CERAMIC	33P	50V	3		3		<u> </u>	-				i c	
CC45CH1H050C		CERAMIC	5 P	50V	1		-		1					C	
CC45CH1H050C		CERAMIC	5 P	50V		Ιí	2	ĺ		i i		į		C	
CC45CH1H680J		CERAMIC	68P	50V	1		1							C	
CC45SL1H39GJ		CERAMIC	39P	50V .	4	Li	4	F		1		j	1	C	
CC45SL1H470J		CERAMIC	47P	50 V	4		4					j.	1	C	
CC45CH1H12OJ		CERAMIC	12P	507	1		1							C	
CC45SL1H050C		CERAMIC	5 P	50V	1	!!	1	1		, i		- 1		C	
CC45SL1H33OJ		CERAMIC	33P	50V	1		1				i			C	
CC73ECH1H080D		CHIP CAP.	8P	50V	1		1!						<u> </u>	c	
CC73ECH1H22OJ		CHIP CAP.	22P	50V	1		1				1			C	
CC73ECH1H070D		CHIP CAP.	7 P	50V	1		1	ĺ	i	-	3			C	
CC73ECH1H16OJ		CHIP CAP.	16P	50V	1		1				,		1	C	
CEO4W1E4R7M		ELECTRO	4.7	25V	1	T	1	1						C	
CE04W1A470M		ELECTRO	47	10V	5		5	1	-		i i			C	
CE04W1A101M		ELECTRO	100	107	3		3	1			'		1	C	
CK4581H102K		CERAMIC	1000P	50V	10		10		Τ.					C	, 8, 11, 13, 57, 94, 97,102 ,117,145,166
CK45F1H103Z	1	CERAMIC	0.01	50V	4		4						1	l c	
CK4581H331K	-	CERAMIC	330P	50V	1	-	1.		+			+	1	C	
CK4581H681K		CERAMIC	680P	50V	l ž	1	2		İ	1		i	1	Č	
CK4581H102K		CERAMIC	1000P	50V	9		-		1			1	1	, č	
CNADBIRIUSK	+	CENAMIC	20001	, 01		-	-	7 1 1 7	+	+	-		+		, 71, 92,131,167
CK45B1H102K	1	CERAMIC	1000P	50V			9					1.		ic	
CQ9ZM1H222K	 	MYLAR	2200P	50V	1		1		1			ı		C	, 74
CQ92M1H822K		MYLAR	8200P	50V	1	! !	1			!		İ	1	C	
CQ92M1H223K		MYLAR	0.022	50V	1		1		_[1			1	C	. 75

					- 0	ISTI	NCTT	TI AZ	e Olion	TITY		
PART.NO	NOTE	NAME & DESCRIPTION	001	011			1	I	- WUAN	11271		REFERENCE.ND
CQ92M1H473K	100	MYLAR 0.047 50V	1		1	 		\vdash	 	-		C , 56
CQ92M1H683K		MYLAR 0.068 50V	1 2		1				1		1 1 1	C -111
CS15E1VR22M	1	TANTALUM 0.22 35V	1 1	1	1	1			1 1	,	1 1 1	C , 49
CS15E1VR47M		TANTALUM 0.47 35V	-1	100	1	1000	177	-	1		-	C 78
CS15E1E010M		TANTALUM 1 25V	. 2	137	2	N. C.	19	!		1:		C , 72, 73
		TRIMMER 6P	1	100	1			l	1 1	Ţ		TC / 2
CC5-0062-05		TRIMMER 20P	1	-	1			-		_		TC , 1
CO5-0030-15	1	TRIMMER 25P	ž		2			!	!		1 1	TC , 3, 4
005-0067-05		CERAMIC 0.01 50V	15		15			l	!		i	C , 5, 19, 23, 24, 29, 33, 34
C91-0117-05		CERAMIC 0.01 30V		1	4.5	-		-	:		 	39, 51, 76, 79, 90, 96,123
]		1			154
		CERAMIC 0.01 50V	7		7	l			!			C . 41, 48, 53,108,115,1 26,149
C91-0117-05	-	CERAMIC 0.022 50V	23	+	23	-			-		-	C , 15, 17, 25, 26, 27, 28, 35
091-1008-05	1	CERAMIC O.OEE 300	1 "	1	1	1		l	1 1			, 36, 37, 38, 55, 80,1 05,106
				1	1					1	1 1 1	,112,132,133,134,140,1 53
404 4000 05	-	CERAMIC 0.022 50V	+			_					 	C ,172,173,176
091-1008-05		CERAMIC 0.022 50V		15	ł	1		ľ		1	1 1	C . 16, 18, 31, 42, 98,1 00,109
C91-1008-05		CERAMIC 0.022 300	1	1 2		1]			- 1		,130,139,141,142,157,1 59,163
				-	-	_	_		-	- 	1 1	,168
		CERAMIC 0.35P 50V		i	1	;				ĺ		C ,169
C91-0498-05		CENAMIC 0.33P 304			1		! !		i !	ļ	1 1	0 /10/
E04-0154-05		RF COAX. CONNECTOR RAZHETZDO	1		1	-				+		
E23-0512-05	i	TERMINAL 1P	9		9	1	i		1	ĺ	1 1 1	
E33-1641-00		TERPINAL IF	i				f		!	í	1	
E40-0473-05	1 8	MINI CONNECTOR 4P	2		2					-		
E40-0473-05	1	MINI CONNECTOR 6P	1	Ι.	1	l i	i I				!!!	
E40-0873-05	1.	MINI CONNECTOR 8P	1 1		i	1	i i		}		1 1	
E40-00/3-03		HINI COMMENTAL OF			-							
F11-0818-14		SHIELD CASE(VCO TOP CASE)	1		1							
L30-0289-05	+	IFT	1		1							L , 44
L30-0281-15	i	IFT	2		2						1 1	L , 9, 13
L32-0624-05		OSCILLATING COI	1		1		;		!	1		L , 21
L32-0639-05	1	OSCILLATING COIL SOMHZ	1		1		i					L , 33
L33-0647-05		CHOKE COIL 18 UH	1		1							L , 14
L33-0668-05		INDUCTOR 3.3 UH	1		1		1			!		L , 20
L34-0894-05		COIL 3 ST	2		2							L , 25, 26
L34-0908-05	1	COIL 3 9.57	3		3				1	1		L , 24, 27, 35
L34-1033-05	1	COIL 3 8-5T	3		3					1		L , 1, 2, 3
L34-0683-05	1	TUNING COIL	1		1							L , 4
L34-0749-05		TUING COIL	2		5					1		L , 45, 46
L34-2041-05	1.	TUNING COIL	2	L	2	!	!					L , 47, 48
L34-2232-05	N	TUNING COIL 51.2MHZ	2 2		2	-						١ , 39, 40
L34-3064-05		TUNING COIL	2		2	i				-		L , S, 7
L34-3066-05	-	TUING COIL	1		1							6
L40-6891-03	+	INDUCTOR . 68 UH	3		3	-						L , 37, 38, 43
L40-1011-17	1.	INDUCTOR 100 UH	. 2		2							L , 32, 34
L40-1511-03		INDUCTOR 150 UN	2		2			i				L , 12, 15
L40-3311-03	1	INDUCTOR 330 UH	2		2					1		L , 30, 31
L40-1021-03		INDUCTOR 1 MH	3		3					i		L , 11, 16, 18
L40-1092-16		INDUCTOR 1 UH	1		1				!			L , 22
L40-1011-14		INDUCTOR 100 UH	2		2					-		L , 23, 36
L40-4711-13		INDUCTOR 470 UH	- 1		1							L , 42
40-1011-13	1 1	INDUCTOR 100 UH	1		1		1					L , 49
L72-0346-05	N	CERAMIC FILTER SFE11.025MJ-A	2		2					1		L , 8, 10
L77-0950-05	"	XTAL 10.6965MHZ	1		1							L , 17
L77-0951-05		XTAL 10.6935MHZ	1		1	- 1	1	- 1				L , 19
	_	77775										

PARTS LIST TS-811A/B/E

				_		0	STIN	CTIO	N 8	QI	IANTI	ŤΥ				DESCRIPTION NO.
PART.NO	NOTE	NAME & DESCRI	TION	001	011	012										REFERENCE_NO
77-1255-05	N	TCX0 10.240	MHZ	1	i	1								1	1	, 28, 29
79-0644-05	Ň	BPF BPJ83		2		2						Ì				
A 8 56		DIODE		2		2									9	, 4, 5
C145155P=K:	177	10	$t = p^{r_1} = p_r$	1 1	1	1	.: .		1			1	.	- 1	G	, 19
C145156P	-	IC		2		2									Q	, 6, 8
C 921		DOUBLE DIODE		1		1					1		-		D	, 7
C921 54459L		IC		1		1									Q	` 52
JM78LOSA		ıc	4.54	1		1		,	4,5	N.					a	
12-1405-05		TRIM.POT. 1K O	нм	3		3									VI	R , 1, 2, 3
				4		4	ĺ								Q	, 3, 4, 6, 31
N16913P	-	IC .		2		2									0	, 22, 36
N74LS90N		1	•			1						1			0	, 30
TA7302P	-	IC .		1	-	-	1	-	-							
UP8555C		ıc		1	<u> </u>	1									Q	
1 S V 5 0	1	DIODE		3	,	3					1.				. [
SA1048(Y)		TR		1		1		ļ.:	ļ	<u></u>	1	1			Q	
SC2459(BL)		TR		3		3	1					1]	q	
25C2459(BL)		TR		3 4	1	1 4				İ					Q	, 9, 34, 35, 39
2SC2458(Y)		TR TR		3	+	3	1	1	1	1	1				Q	
2 S C 2 4 5 B (Y) 2 S C 2 7 B 7 (L)		TR' 1 1	1.00	3		3						1			Q	. 24
25C2668(Y.O) 25C2668(Y.O)	1	TR		1		1				1	1			1	Q	, 32
25C2668(Y,U)	1	TR		6		6				1					Q	
2SC2668(Y)	1	TR		1 2		1 2		-	1	-	-	+	-	-	9	
25K192A(GR)*N		FET		5			1.									
3SK73(Y)		FET		1	_	1	1	-	-	-	-	-	-	-	Q	, 2
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IE; Ollie (,,,,,	000-00) (M,T,W,X)		_	D	ISTI	NCTIO	N S	g Qi	SANT	ITY				
0.07 20	NOTE	NAME & DESCRIPTION	000	1	1										REFERENCE, NO
PART.NO C45CH1HOR5C	MULE	CERAMIC 0.5P SOV	2		1				i		1				C . 14, 27
C45CH1H050C		CERAMIC 5P 50V	3			١.	1 !		! !						C , 3, 9, 38
		CERAMIC 10P SOV	3			1 .					1				C , 15, 32, 44
C45CH1H100D	-	CERAMIC 22P 50V	2	T-1	7	100			1	5					C , 23, 28
C45CH1H22OJ		CERAMIC 100P 50V		1	1:1	1		14	1 .	. 1:	100		1,334	. 13	C , 6, 11, 18, 34, 40
C45SL1H101J	1	CERANIZO	1		1	1:	1 1		1 1		. 1				C · / 2
C73ECH1H100D		CHIP CHI	1		+	1									C , 1
C73ECH1H22OJ	1	CHAR CHES SEL	l i		1	1	i i								C , 43
CC73ECH1H330J		CHAP CAPA	1			ļ	1	i	l i						C , 12
CE04W1C100M		ELECTRO			+	-									C , 16, 22
CK4581H471K		CERRITO	14			1	1 .		١. ١	٠.					C , 4, 5, 7, 10, 17, 19,
CK45B1H102K		CERAMIC 1000P 50V	14	1 .	100		١.	:							, 25, 26, 29, 33, 35, 39,
	-	CHIP CAP. 1000P 50V	-	+	+					*********					c , 8, 13, 20, 31, 36, 42
CK73EB1H102K		CHIL CHIL	3		i	1	i		1 1						TC , 1, 2, 3
05-0062-05	1	- H Tribited	1 1			1	1				1				TC , 4
005-0031-15	1				+	+	1				-				C , 37
C91-0498-05			1 6		1	1	i			1	1				C , 30 F
C91-0757-05		CERRITAG	l i		1		1				1	1	1		C , 24
C91-1008-05	-	CERAMIC 0.022 50V		+	+	+	1	-		_					
	1	RF COAX. CONNECTOR RAPHET, DO	2									ĺ			
E04-0154-05		TERMINAL 1P	9		İ	į	1 _				1	L			TP , 1, 4, 5, 6, 7
E 23-0512-05	-	CONNECTING WIRE (A)	1			1	1.,,,,,,	1			T				
E31-2064-05	*	LEAD WITH CONNECTOR	1 3		1		I.	1	1 1		1				i .
E31-3079-05	N =		1 3			1	1			1.1.	1				TP , 3
E40-0211-05	-	MINI CONNECTOR 2P	-	+	+-	+	1				_				
		WIDE BAND TRANSFORMER	1 2			1									L , 2, 3
L19-0309-05		TUNING COIL	1 2		Į	1	1	Į]			1			L , 8, 9
L34-2041-05	+-		-1-1			1			1						L , 6
L34-0824-05			1		1	1	12				1		[L , 14
L34-0893-05		COIC	- 1 - 3		1	1	1	1		!	i	I	1		L , 1
L34-0908-05		COIL	+-1		+	 			<u> </u>						L , 12
_34-1015-05		-	1 1		1	1	1	ĺ		l	1				L , 11
L34-1016-05		COIL 3 4.5T	;		1	1	1				1				L , 13
L34-1114-05	N	COIL 3 4.5T			+	+	+		-			-		-	L , 7
L40-1092-14		INDUCTOR 1 UH				1	İ				1		}		10
L79-0650-05	N	HELICAL 290MHZ	1			1]				l		15
L79-0651-05	N	HELICAL 405MHZ	2	4	+-	+-	-		1	<u> </u>	-		-		L , 4, 5
													1		0 , 2
MV13		VARISTOR	1	.[1							
		DIODE	1	-	1-	1	1			_	—	1	1		D , 1
N0487C1-3R		01000	-1			1		1							
25(2026	1	TR			1		-							<u> </u>	Q , 1, 2, 5, 6, 7
2S(2570A	-	TR	1		1		1	1							1
2S(2787(L)	1	TR	1	- [1	1	1	1							9 , 4
				+	+	+					+				<u> </u>
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TS-811A/B/E PARTS LIST

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PART.NO	NOTE	NAME & DESCRIPTION	010												REFERENCE.NO
C45CH1HOR5C	10.2	CERAMIC 0.5P 50V	2						- 1			1			C , 14, 27
C45CH1H030C	i	CERAMIC 3P 50V	1				- 1					i	-		C - 46
CC45CH1H050C	1	CERAMIC SP 50V	3		1 1										C , 4, 9, 65
CC45CH1H070D	-	CERAMIC 7P 50V	1	7.7											C , 38
CC45CH1H100D		CERAMIC 10P 50V	2	1 2	1		. [l	- 1				×**	C 44, 52
CC45CH1H120J		CERAMIC 12P 50V	1	I .	} !										C , 56
CC45CH1H150J	-	CERAMIC 15P 50V	1	1											C , 15
		CERAMIC 22P 50V	4						l i	l i	i !				C , 24, 29, 33, 60
CC45CH1H220J		CERAMIC 33P 50V	1				- 1					- 1			C , 48
CC45CH1H330J	-	CERAMIC 56P 50V	. 1		1.7	-				3. 2			15.		C . 50
CC45SH1H560J	i	CERMITE	11		:				. 1	7		.		1	C , 3, 7, 12, 19, 35, 36, 40
CC45SL1H101J		CERAMIC 100P SOV				. !			1		!!	. 1		,	, 41, 58, 62, 63
			2	1		1	-								· C , 1, 2
CC73ECH1H150J	í	CHIP CAP. 33P 50V	1			1					1				C , 43
CC73ECH1H330J		CHIP CAP. 100P 50V	3						! !				i		C , 6, 11, 18
CC73ECH1H101J	-	CERAMIC 470P 50V	1 2					-							C - 16 - 21
CK45B1H471K		CERMITED	8	1					-						C , 23, 25, 28, 31, 39, 45, 49
CK45B1H102K		CERAMIC 1000P 50V	l °	1		l I						'	١.		, 53, 66
		CERAMIC 2200P 50V	2	+			-	-	\vdash	-					C , 26, 54
CK4581H222K	1	CERRITA	16		1	}		i						1	C . S. 8. 10. 13, 17, 20, 30
CK73EB1H102K		CHIP CAP. 1000P 50V	1.0	1					i						, 32, 34, 37, 42, 47, 57, 59
							-	-	1		-				4 614 64
		TRIMER 308			l ^				ŀ i	l				}	c , 3
C05-0030-15		KIMMEN	1 1	100	18.	3.3					1		1		TC 2
CO5-0031-15		TRIMMER 10P			-		_	-		-		-	-	-	TC / 1
005-0062-05		TRIMMER 6P	1	ĺ					1	l	1	1	l	1	C , 55
091-0498-05		CERAMIC 0.35P 50V	1	1		1		1	1	1				1	C 67
091-0085-05		CERAMIC 0.022 SOV						<u> </u>		-		-		!	ic , 51
C91-0757-05	1.	CERAMIC 0.001 50V		1				}			h P		}	1	C , 22
C91-1008-05	t .	CERAMIC 0.022 50V	1	1:	100			:	1	İ	1	ì	ł.	1	C , 22
				!						1	,	1	-	-	
E04-0154-05		RE COAX. CONNECTOR RAPHET, DO) Z	i				İ	1	!		ļ.	l		
•••		!		ŀ					1	ì		į	1		L , 2, 3
L19-0309-05	i	WIDE BAND TRANSFORMER		!	-	_	_	-	-	-	-	-	-	-	1 17
L33-0026-05		CHOKE COIL	1 4	t		l i	ì		1		1	i	!	1	6, 9, 18, 19
L34-2041-05	-	TUNING COIL			ļ		1				1	l	ŧ	i	L , 6
134-0824-05		COIL 3.5 2.5T	1		-	L		ļ			-			-	L , 13
_34-0893-05		COIL 3 4T	1 1			1		ŀ			-			1	1 1
L34-0908-05		COIL 3 9.5T	1 1			i	ļ	į.	1	1			ļ		L , 12
L34-1114-05	1	COIL 3 4.5T	1		1	1					-	-	-		
L40-1092-14	1	INDUCTOR 1 UH	. 3				1			1	1	1	1	1	L , 7, 23, 24
L40-1011-14	1	INDUCTOR 100 UH		100	14.						1		i		L , 14, 22
L40-1092-16		INDUCTOR 1 UH :	. 1	10	1		1		-1		1	_	1	-	L , 16
_77-1270-05	N	XTAL 42.38857MH2		. [1	! _	i	1	1		1	1	L , 15
179-0650-05	1 "	HELICAL 290MHZ	- 4						1			-			L , 10, 11, 20, 21
L79-0657-05	N	HELICAL 400-420MHZ	2		1		!		1	1	-	1	-	-	L , 4, 5
2/7 0031 03		the second secon		T	1		1		1	1	ŀ	ì	1	1	
MV13	i	VARISTOR	1 1		1	52	i. '	1	1				ļ	İ	D , 2
						1					1		 	-	0 , 1
ND487C1-3R		DIODE	1 1		j .	1		1	1	1		1	1	1	0 , 1
					i	1	1	į	1	1					TH , 1
112-102-2		THERMISTER		4	11.0	-	ļ	1	-	-	T .	-	 	+-	110 6 4
	1		٠ ا		1	1.	1 4 1	Ι΄.	1	ļ. '	1 .	l'	11.		Q , 10, 11, 12
2SA933S(Q)	N	理 站 美观 多感 粉			12.	1 7	125	100	March.	des "	I	h .	1.0	4.	Q , 2, 3, 5, 6, 7, 15, 16
2502026	1	TR		i	200	1	1250	-	1: "	1	1	-	1		
2SC2787(L)		TR		3	1		i		1	1	i		1	1	11
2SC2570A		TR	1 1	4	1				1	1	1		i		
25C17405(Q)	N	TR	1 1	2	1	1	1	Ι.	1	1	1		1	L	Q , 8, 9

TONE UNIT (X52-1290-60) (T,W)

							D	ISTI	4CTIC)N 8	g Q(JANT	[TY				DESCRIPTION NO.
PART.NO	NOTE		DESCRIPT	TION	060												REFERENCE.NO
K4581H102K	1	CERAMIC	1000P	50V	1 1												
Q92M1H472K	i '	MYLAR	4700P		1					. !			i				c
CQ92*1H103K		MYLAR	0.01	50V	1												I C
Q92M1H333K		MYLAR	0.033	50V	1 1						i						C C
190-0847-05		ELECTRO	47	10V	1			f. 1	1 1			1					į ¢
91-0433-05		CAPACITOR	0.01		1			1	1 1		l. 1						c
091-0433-05	-	CERAMIC	0.01	50V	1				$\overline{}$								C
191-011/-05		CERMITO	0.01		1 -				1	ļ l							
	1				1	1	1		1 1		ļ						
40-0417-05				1		1.1	45.83		127.51		1						
	1.	IC	18 45		1	3	1300	k	'				,	17			IC - 1
NE555P	!	10	100	7 5 5 5 5	100	100	1000	10 M			1:01	1.14					
	-	RES. CARBON	4.7KOH		1												R
RD14882C472J	1	RES. CARBON	12K DH		1				'								R
RD14BB2C123J			33K OH		1	1			('				;				R
R014BB2C333J	1	RES. CARBON	47K OH	M 1/0W	1			-			-		-				R
RD148B2C473J	1	RES. CARBON	A/K UNI	4 / 9 / 1	i			1	!			i					R
RN14BK2B9102F	i	METAL FILM	91K .	1/0#	1		ſ	11 3	'			1					VR , 1
R12-3521-05		TRIM.POT.	20K		, 1	-	<u> </u>	-		-					-	_	
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PARTS LIST TS-811A/B/E

CONTROL LINET (Y53-1410-XX) (-12 : K -22 : M,X -52 : T -62 : W)

		(X53-1410-)										ANTI	. 1 7				REFERE	MCF.NO			
	NOTE	NAME &	DESCRIPT	TION	012	021	022	051	052	061	062	i					C , 52				
	NUIE	CERAMIC	15P	50V	2		2	- i	2	- 1	2		- 1		i	- 1	c , 73				
C45CH1H150J		CERAMIC	27P	50V	1		1	1	1	- 1	1		- 1	- 1	- 1		c , 72				
C45CH1H27OJ	1	CERAMIC	27P	50V	1		1		1		1						Ç 54				
C45CH1H270J		CERAMIC	33P	50V	1		1		1		. 1				- 1	1.7	c 44				
C45CH1H330J	ĺ	CERAMIC	120P	50V	1		. 1		.1	1	1.1	1.02		::: ·::	· ~1	1.	c 65		1		
C45SL1H121J	ļ	ELECTRO	220	16V	. 2		. 2		. 5		- 2										
E04W1C221M		ELECTRO	470	10V	1		1		1		1			-	1						
E04W1A471M			0-47	50V	1		1		1		1		1				C , 19				
EO4W1HR47M	1	ELECTRO	0.1	50V	2		2		2		2										
F92V1H104J		POLYESTER	1800P	50V	1		1		1		1		5			923.					
K45B1H182K	1 .	CERAMIC	1800P	50V -	1	1	-1	1	. 1		. 1		1.	1	10 10	1	C 21				
Q92M1H182K	1.	MYLAR	1000P	50V	1		. 1		1	Y	- 1				15.		C 43				
Q92M1H102K		MYLAR	6800P	50V	1		1		1		1						C - 46				
Q92M1H682K	1	MYLAR	10	100	1		1		1		1	1	1				C . 22				
S15E1A100M		TANTALUM		50V	1 1	!	! 1		1		1		1				C , 45				
90-0838-05		ELECTRO	1	10V	2	+			2	-	2	1					C 48	50			
290-0846-05		ELECTRO	33		1		2		1		1		1 3				C . 42				
90-0847-05		ELECTRO	47	10V	l i	1 1	i		1		i		ì		1 1 1 1	S	C 0 41				
090-0837-05	1	ELECTRO	0.1	50V	8	+	8	-	8	-	8						C , 1	, 8, 10	30, 30, 3	1, 70	10 7
C91-0457-05		CERAMIC	0.022	50V		1	١ ،		"		"	1		i		1	/ 84				
4,,	1	i					2	1	. 2		2	1	1	ļ	1		C 2 20	. 64			
C91-0457-05	1	CERAMIC	0.022	50V	2				4	-	4		+	 	100		C ,	, 9, 1	0, 36		
C91-0753-05		CERAMIC	470P	50V	4		4		1	٠.	1	1. 1		ł	1 3		C , 8				
C91-0117-05	1	CERAMIC	0.01	50V -	. 1		1	1			21		1		l: . :		C .	. 3,	4. 5.	6 - 11	1 - 1
C91-0757-05		CERAMIC	0.001	50V	21	ļ.,	21	-	21	1	1 57	+		 		-	4 1	5, 14, 2	9, 32, 3	5, 38	3, 3
241-0/3/-03	+	1										1	ļ	1	1	1	- 41	68, 7	9, 80, 8	1, 8	2
	Į.				1		1	1			1	i	1	1	1	1	C . 8				
		CERAMIC	0.001	50V							-	-	+		 	-	C 6 5				
C91-0757-05	+	CERAMIC	470P	50V	1	100	1			- 50		1	1 .		1 -		G , 2	7, 28, 7	7. 78		
C91-0753-05	1	CERAMIC .	0.001	50V-	4		1 4		4	1 .	4		1 2	1., .	1:	1 11	C. 1	18, 2	n. 23.	14. 3	×. 3
C91-0757-05	1	CERAMIC	0.01	50V	-	12		12	L	12		1.		μ.	-	1	16. 0 1	1, 55, 6	7. 76.	15	
C91-0769-05	-	CERAMIC								1			i	1	!	1	1. 1.	7, 25, 6	3 . 74 .	75	
		4-04476	0.01	50V	1 5	;	5		5	1	5		i	i		1	C , 1	() () , 0	31 /41		
C91-0769-05		CERAMIC	0.0.			i	1	1		1		1				<u> </u>			4, 5,	4	7
		10000			- 6		6	i	6		6		Ţ .		1	i	D			9/	,
DAP 401	N	DIODE			3	3	3		3	1 -	3		.1	ļ	1				5		
DTA114YS		DIGITAL TR			1 3		1 3	il.	3	1	3			1	1	-	Q ,		6		
DTA114YS	N_	DIGITAL TR			1 2		1 2	1	2		7	2	T	1	1	1	Q / 1	1, 12			
DTC143TS		DIGITAL TR			"		! -			j .	ļ		1	1	1	1					
	-		0.071		1 1	. !	1 1	1	1	1	1 :	ı.	i		!	<u> </u>					
E02-0122-05	, N	IC SOCKET	24PIN		1		7		2	-	1	2	10			1					
E23-0512-05		TERMINAL	1P				1 '	1	1	100	420	1	# S	14.45	1	1.				*	
						4	1 4	177.50	- tion-	150	-1 - 3		1	1.	1: 7	1					
J32-0761-04	1	STUD & BOSS	(STICK T	YPE)		-	-	-		+	+	-	+	-		1					
					- 1 .	.	1 :	, i	1	1	1 .			1			X /	2			
L77~1206-05	N	XTAL	3.686	4MHZ		1			1			il	1	1	1			1			
L78-0009-05	N	CERAMIC OSC	4MHZ			1	1	-	+ *	-	-		-	- 	-	-	1				
E10-0003 03						.	1 .	. i		1	1.	عدال	4		1	1	IC . 1	4			
MB8418-20LP-GF	A A	lic .	SBIT :	X2(RAM)	. :		F .1		1			1	1			1	IC . 1				
MC14584BCP	17	ic				1 _	1		1			11			-	-	IC ,	1, 2			
		TIC				2		2	2		- 1	2	i		1	1	IC , 1				
MC14069UBCP		ic					1 :	l (1				1	1	1		0 , 1				
MN 6 127 A		ZENER DIODE	12V		1 :	1		1	1			1		-		+					
MTZ 12JB		ZENER DIODE	9.1V			1		1	1			1		1 .		1					
MTZ 9.118	1		.7 . 1 4			1	1			1	A =			1.		1.	IC , 1	0 -			
M5L8255AP-5	N	IC				1	1	1	1 .	100			1	4			1				
		100000000000000000000000000000000000000			-	2		2	2			2									
N30-3006-46	-	PAN HO SCREW				1		1	i				1	1	1						
N30-3010-46		PAN HO SCREW				2		2	1 2	i	1	2		1		1_	1				
N87-2606-46	ŧ	TAPPING SCRE	W			- 1	-		-												

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PARTING N	OTE	NAME & DESCRIPTION		021		051		061	062	- 1			-	-+	IC 10
		IC	1		1		1		1	1		- 1	- 1		
313100			1		1		1		4	- [1			-	VR , 1
112-4416-05	N	TRIM.POT SOK		-	5		- 2		-21		-	_			R , 3, 15
90-0515-05		RESISTOR BLOCK 10K	2	1	1		1	ļ	11		1	- 1	- 1	- 1	R , 89
90-0521-05		RESISTOR BLOCK . 47K X7	1 1		1		- 1	- 1	1	- 1	ł		- !	- 1	R , 83 .
R90-0532-05		RESISTOR BLOCK 27K X5	1		1	-	1	- +	1	-	-			1	R , 38
190-0534-05		RESISTOR BLOCK 10K X5	1 1		1:	- 1	1	- 1	1		- 1		- 1	- 1	R , 70
90-0578-05	N	RESISTOR BLOCK 5.1K X10					1		- 1		- 1		-		10 , 23
N74LSO5N		IC	1	100	1	. 1	1		. 1			. 1	-		IC , 23
SN74LS32N		ic	1	1:-	1		1		1	. !	1	. [- 7		IC , 15
SN74LS138N		1C 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	- 1		3	1000	3		31	-	-	-		-	IC , 12, 17, 22
N 74LS174N		16	3		اد	f	اد			- 1	- 1	- 1	- 1		
314 7 45 3 2 7 4 14			1 _	1	7	ł	7		7	- 1		1	- 1	- 1	10 , 3, 4, 5, 6, 7, 8,
TC4011BP		IC OR BU4011BP	7	-								-			1C , 1, 2
C 4069UBP		IC	1	i	1	. 1	1		1	i	- 1	ļ	ļ		IC , 16
TMP8255AP-5	N	ic	1 1	1	1 1	. 1	*	ļ	- 1	1	- 1	i	- 1	- 1	
2622777			+	1-	4	-	1		1		-				IC , 18
UPC4558C		10	1 1		1		1	į	- 1	!					1C , 21
LP C7805H		110	1		1		1		1			Į		i	
UP 07802G-088-36		MICRO-PROCESSOR	1	1	1				L	-					10 , 16
UP 08255AC-5	N	10	1 .	1	1		1		1	ļ		-			IC , 20
UP D7507G-575-00		MICRO-PROCESSOR FOR DCS	1	1	1	:.	1		1	- 1				. !	
0.0013014-313-00			1		1 25	٠,	4.5		19						D , 2, 8, 9, 10, 13, 14, 1
100177		DIODE	19	1	19		19		19			- 1		.	, 18, 19, 20, 21, 22, 23, 2
15 5133				1								.			, 25, 26, 27, 28, 29
															0 , 33, 35
		DIODE	2		1	. ~	i					i. 1			0 , 12, 30, 35
18 \$133			1	100	-3				i	11 .		31	· '		0 , 16, 30, 33, 34, 35
18 8133		DIGDE					5							_	D , 16, 30, 31, 32, 33, 34, 3
15 5133		DIODE		\top	ì				7	i !				li	0 , 10, 30, 31, 32, 33, 34, 3
188133		DIDOC	1				1						ĺ		0 14
			1		1		1		1						Q / 14
25 A1307 (Y)	N	TR	2	2	2		2		2						Q , 18, 20
25 A1015 (Y) .		TR	1		1 1		1		1						9 , 21
25 A1048 (Y)			- 1												Q , 21
25 A1115(E)		18	3	3	3		3		3						Q , 16, 17, 19
25 A1015 (Y)		TR	1 2		1 1		1	ļ	1						0 , 13
2S C:959 (Y)		TR	1 4		4		4	1	4						Q , 7, 8, 9, 10
25 C2458 (Y)		TR	1		1		1		1						Q , 15
25 (2703 (O, Y)		TR .	1.		1 -		ļ -		_				. 1	1	t
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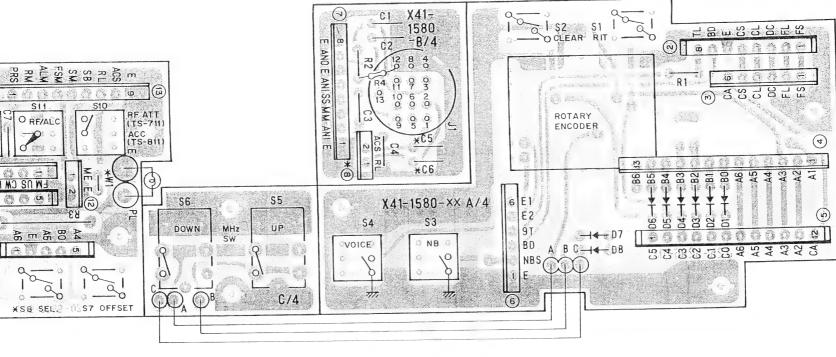
TS-811A/B/E PARTS LIST

DISPLAY UNIT (X54-1820-11)

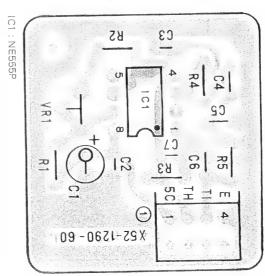
					0.1	STINC		8 QU.		T1	REFERENCE.NO
PART.NO	NOTE	NAME & DESCRIPTION	011	1							C 20
C45SL1H101J	1	CERAMIC 100P 50V	1			i		1 1	1		
E04W1V100M		ELECTRO 10 35V	2	i	- 1			1 :		1 1 '	C . 12. 13
E04W1C100M		ELECTRO 10 16V	2	i		1				1	C , 10, 14
E04W1C330M		ELECTRO 33 . 16V	; 1		1		1		i.		C , 8 .
		ELECTRO 47 10V	1		1				· [1	C , 5
E04W1A470M	1	ELECTION	8	!	t	- 1		1 1	1	: !	C , 1, 2, 3, 15, 16, 17, 1
K4581H102K	1	CERAMIC 1000P 50V									. , 19
	i i			1	i		- 1		1	1	C , 11
092M14103K		MYLAR 0.01 50V	1			- 1			!	1	C / 4
CQ92*1H223K	i	MYLAR 0.022 50V	1		-					 	
091-0769-05		CERAMIC 0.01 SOV	1			1	1	1 1	i	1	C , 7, 9
091-1008-05		CERAMIC . 0.022 50V	2		i		ļ	1 1		1 1 1	C , 1, 4
111-1000 02		1	. 11		1		· i				
OTA124EF	N	DIGITAL TR	2								Q , 11, 12
UIAIZAEP	146	DIGITAL IN				İ	i		Ì	1 , !	
		AD METAL SOCKET	1		. 1	j		i	'	1 1	
E06-0858-05		BP METAL SCCKET EARPHONE JACK EXT.SP	1					-	i		
E11-0401-05			1				1			1 1	i
E11-0407-05]	EARPHONE JACK	1	1	!		!		1	1 1 '	
E11-0413-05		PHONE JACK PHONES			-		-			1	
E11-0422-05	N N	KEY JACK KEY	1			1		1 '		1 1	
E31-3052-15	. N	TAPE CABLE 10X25MM	1	1				1 .		.	1
E31-3053-15	N	TAPE CABLE 12X25MM	1			i_					
E31-3054-05	N	TAPE CABLE 4X50MM	1	1					1		
E31-3055-05	i N	TAPE CABLE 11X50MM	1	1	} 1		ļ	1 1	i	1	i
	N N	TAPE CABLE 12X50MM	1	1			1		1		
E31-3056-05	N	TAPE CROLL			1	_				i .	
	1	Lander M. Tund	1		: 1				j	1	V , 1
FIP11FM7		DISPLY TUBE	*]	: 1	į	1	, ,			ļ.
				i 							1 1
L19-0323-05		TRANSFORMER	1	1	i ' !				i i	i ! '	IL , a
L30-0504-05		IFT ·	1	1		į	1		1	1 1	L , 3
L40-1511-14		INDUCTOR: 150 UH	1		<u> </u>						;
L40-1011-04		INDUCTOR 100 UH	1		1 1				1		1 1 -
140 1011 04	1		1	1				!	1		
MC931	1	DIODE	. 2								0 , 3, 4
		DIODE	1								D , 2
MTZ6.2JA		DIODE	1		1 7	i	l				D , 5
MTZ7.5JA	1	01005	1	1	1 1				'		
		TRIM.FOT.(5K)	1	1	-	1		-			VR , 6
R12-2413-05	1		1			i i	i			1 '	ivR , 3
R12-3446-05	ŀ	TRIM.POT.(30K)	1		1		į			1	V9 , 7
R12-5420-05		TRIM.POT. 100KOHM			-					+	VR / 8
R12-7403-05		TRIM.POT. 500KOHM	1		1	i I	i				VR , 4
R19-3420-05	.	POTENTIOMETER	1			-	- 1		:	1	VR , 2
819-9409-05	. N	POTENTIOMETER	1				- 1	Г			
R24-9404-05	N	POTENTIOMETER	1						1		
R90-0520-05	1 10	RESISTOR BLOCK 47K OHM X5	1 1	1	1 '	1			i I		. R , 25
		RESISTOR BLOCK 47K OHM X6	1 1	.	1		- 1			<u> </u>	R , 24
R90-0522-05	- 1 11	RESISTOR BLOCK 47K OHM X11	1								R 23
R90-0579-05	N		1 1		1			- 1	!	1	
	ì	Agreement of the second	1 2	J 1	1 -		ŀ	!	1	1	Q , 7, 8
TC5066BP		.10		+		1				-	
	1	1		!		1 1			!	1	9 6
UPABOC		IC	1		1				1 1	i	9 5
UPD763C	N	IC	1		1				1	· · · · · · · · · · · · · · · · · · ·	1 13 / /
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4440		DIODE	1	.1	1 .	[. I	i		1		0 1
1N60	l	THERMISTOR		. I	i						TH / 1
112-351-2		INERMISION		-	1		1				T
	1			. [1		1			1 1	Q , 9, 10
25C1959(Y)		TR			1	! I			1	' !	Q , 4
25C2458(Y)	1	TR		-	-						

PC BOARD VIEWS TS-711/81

SWITCH UNIT (X41-1580-XX) Component side view (-01: TS-811 K,M,X -11: TS-711 K,M1,M2,X -61: TS-711 T,W -62: TS-811 T,W)



TONE UNIT (X52-1290-60) Component side view (TS-711 T,W TS-811 T,W)



TS-811

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TS-711

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K,M1,M2,X

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D1-8:1SS133

D/4

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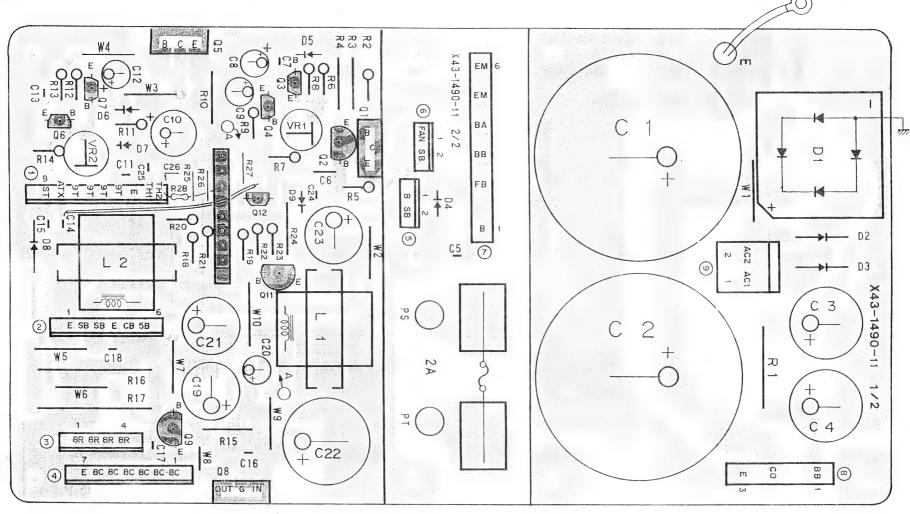
S9 TONE

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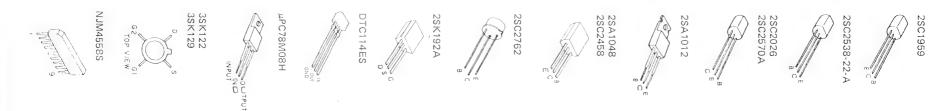
AVR UNIT (X43-1490-11) Component side view

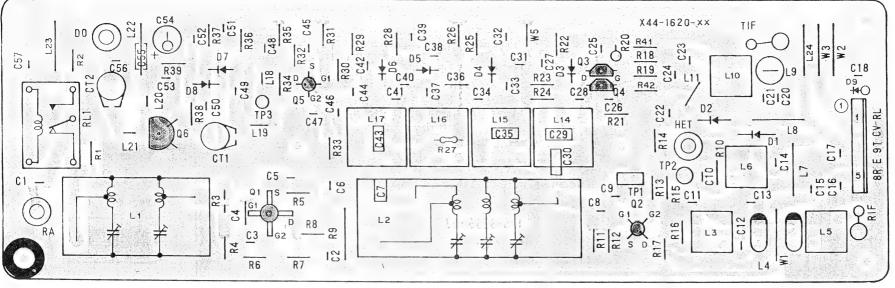


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Q1,5: 2SA1012(Y) Q2,9,11: 2SC1959(Y) Q3,4,6: 2SC2458(Y) Q7: 2SA1048(Y) Q8: \(\mu\)PC78M08H Q10: NJM4558S Q12: DTC114ES D1:S10VB20 D2,3:V06B D4:U05B D5:MTZ8.2J(B,C) D6:MTZ6.2J(A,B) D7:VD1223 D8,9:1SS133

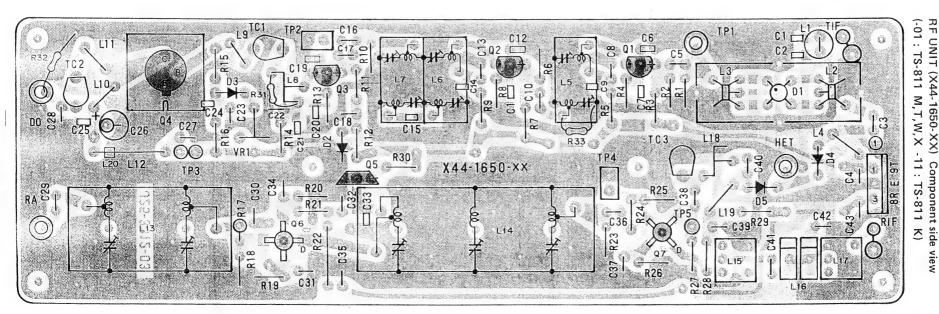
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VIT (X44-1620-XX) Component side view TS-711 T,W -11 : TS-711 K,M1,M2,X)

Q1: 3SK129(Q,R) Q2,5: 3SK122(L) Q3,4: 2SK192A(GR)*N Q6: 2SC2538-22-A D1,2: MA856 D3-7: 1SV123 D8,9: 1SS133



Q1,2:2SC2026 Q3:2SC2570A Q4:2SC2762 Q5:2SC2458(Y) Q6,7:3SK129(S,T) D1:ND487C1-3R D2:MV13 D3:1SS133 D4:MA856 D5:MA856 (M,T,W,X),1SS97 (K)

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FINAL UNIT (X45-1380-11) Component side view (TS-711 K,M1,M2,T,W,X)

L5

C19

C14

C3

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L1

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VR2

₩9

VR1

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1 = 1

Q1: M57727 Q2: 2SA1012(Y) Q3: 2SC1815(Y) Q4: 2SA1048(Y) Q5: 2SD717(O,Y)

C 29

Q1: M57727

C24

D1: MI407 D2: MI308 D3: 1SS101 D4-7: 1S1587 TH1: SDT1000F

Q5 ,

1 EM

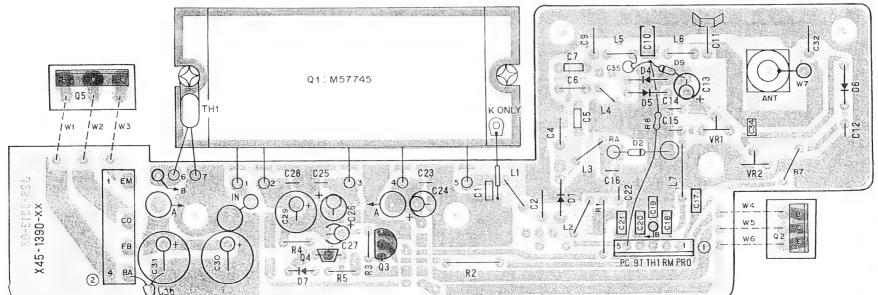
CO

FB

lw5 1W6

iW4

X45-1380-1

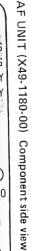


C22 C23

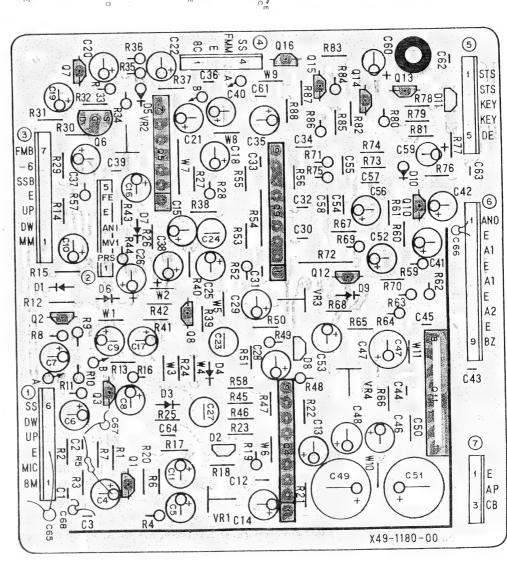
Q1:M57745 Q2:2SA1012(Y) Q3:2SA1018(Y) Q4:2SA1048(Y) Q5:2SD717(O,Y)

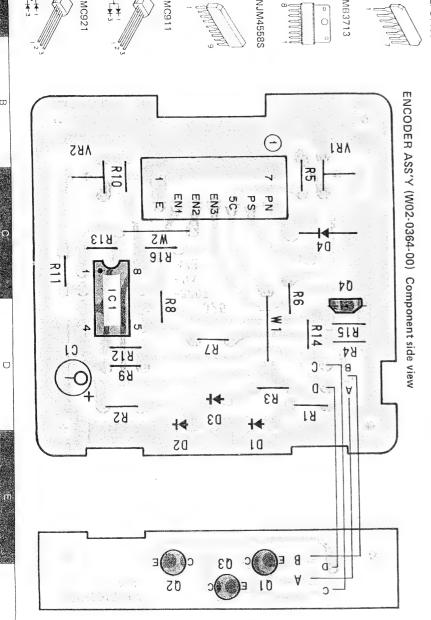
D1: MI407 D2: MI308 D4-7,9: 1SS101 TH1: SDT1000F

FINAL UNIT (X45-1390-XX) Component side view (-01: TS-811 M, X -11: TS-811 K -61: TS-811 T -61: TS-811 T,W)



2SC1815





Q1-3: PN126S(R) Q4: 2SC2458(Y)

IC1: LM358P

D1-3: LN66(R) D4: V06B

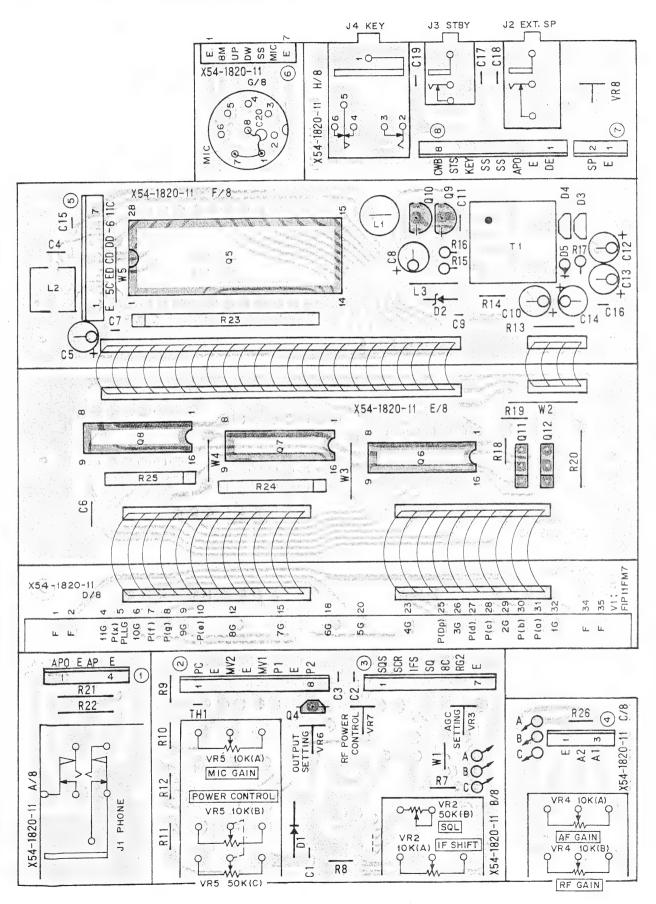
2SC2459(GR) Q2,13: 2SA1048(Y) Q3,7,8,10,12,14-16: 2SC2458(Y) μPC1158H2 Q6: 2SK30A(GR) Q11: MB3713

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TS-711/811 PC BOARD VIEW

DISPLAY UNIT (X54-1820-11) Component side view



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Q4:2SC2458(Y) Q5: µPD763C Q6: µPA80C Q7,8:TC5066BP Q9,10:2SC1959(Y) Q11,12:DTA124(F) D1:1N60 D2:MTZ6.2JA D3,4:MC931 D5:MTZ7.5JA TH1:112-351-2

FX:

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Bind screw x 8

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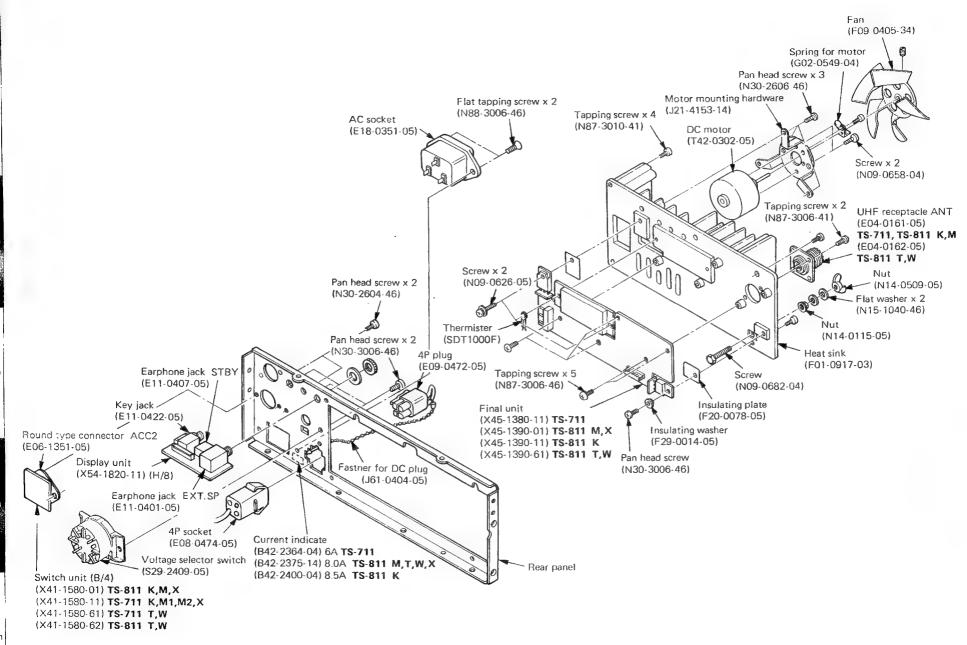
C

S11,12 (S40-2440-15)

Push switch

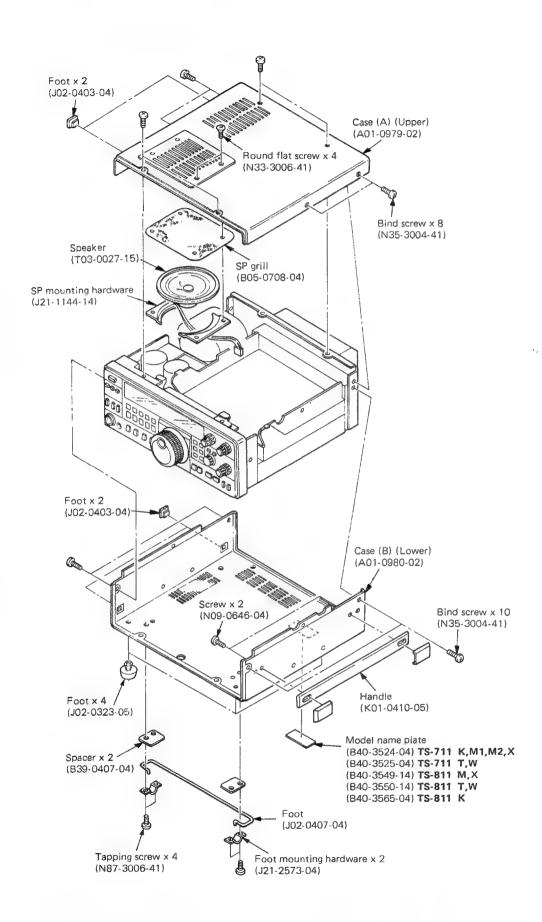
RF/ALC,PROC.

OWNER	ULLIANIS AVA1 150	0 VVI / 01 . TC 01	1 MAN W 11 TO 711 MAN AND W 61 TO 711 TW 62 TO 011 TW	DISPL	AY UNIT (X54-18	20-11)	
(A/4)	.H UNII (X41-158	U-XX) (-U1: 15-81	1 K,M,X -11:TS-711 K,M1,M2,X -61:TS-711 T,W -62:TS-811 T,W)	(A/8)	AT 01111 (70-7-10	20 117	
S1,2	(S50-1412-05)	Tact switch	RIT,CLEAR	J1	(E11-0413-05)	Phone jack	PHONES
S3	(S40-2440-15)	Push switch	NB	(B/8)			
S4	(S40-2441-15)	Push switch	VOICE	VR2	(R19-9409-05)	Potentiometer	SQL/IF SHIFT
_	(W02-0365-05)	Rotary encoder	RIT	VR5	(R24-9409-05)	Potentiometer	MIC/RF PWR
(C/4)				(C/8)			
S5.6	(S50-2402-05)	Tact switch	MHz (UP, DOWN)	VR4	(R19-3420 05)	Potentiometer	AF/RF
(15/4)	(330 2402 031	, det striten	mile (or postin)	(D/8)			
S7,9	(S50-1412-05)	Tact switch	OFFSET, TONE	V1	(F1P11FM7)	Display tube	_
S8	(S50-1412-05)	Tact switch	SELECTOR K,M,X	(G/8)			
S10	(S40-2440-15)	Push switch	BE ATT (TS-711) ACC (TS-811)		(E06-0858-05)	8P metal socket	MIC

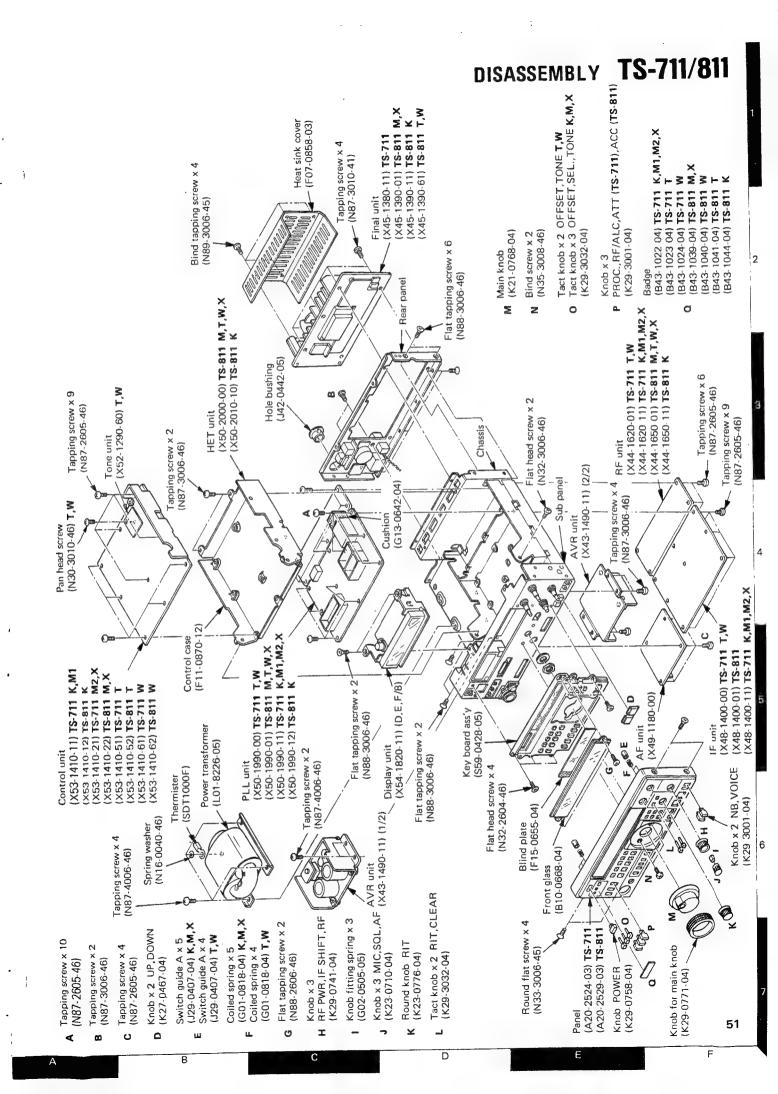


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TS-711/811 DISASSEMBLY



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ADJUSTMENT

REQUIRED TEST EQUIPMENT

1. DC V.M

1) High input impedance

2. RF VTVM (RF V.M)

1) Input impedance : $1M\Omega$ min., 2pF max. 2) Voltage range : F.S = $10mV \simeq 300V$

3) Frequency range: Up to 450MHz

3. Frequency Counter (f. counter)

1) Input sensitivity: Approx, 50mV 2) Frequency range: Up to 450MHz

4. DC Power Supply

1) Voltage: 10V ~ 17V, variable

2) Current: 6A min.

5. Power Meter

1) Measurement range Approx.: 30W, 3W, 1W

2) Input impedance : 50Ω3) Frequency range : 450MHz

6. AF VTVM (AF V.M)

1) Input impedance : $1M\Omega$ min.

2) Voltage range : F,S = 1mV ~ 30V

3) Frequency range: 50Hz ~ 10kHz

7. AF Generator (AG)

1) Output frquency : 100Hz ~ 10kHz

2) Output voltage: 0.5mV ~ 1V

8. Linear Detector

1) Frequency range: 450MHz

9. Field Strength Meter

1) Frequency range: 450MHz

10. Directional Coupler

11. Oscilloscope

High sensitivity oscilloscope with horizontal input terminal

12. SSG

1) Frequency range: 144MHz and 430MHz bands

2) Modulation: AM and FM MOD.

3) Output level: -20dB to 100dB

13. Dummy Load

1) 8Ω, 30W (approx.)

14. Noise Generator

Must generate ignition-like noise containing harmonics beyond 450MHz.

15. Sweep Generator

1) Sweep range: 1440MHz and 430MHz bands

16. Tracking generator

PREPARATION

 Unless otherwise specified, knobs and switches should be set as follows Table 11.

POWER SW	ON	R= POWER	MAX
PROC. SW	OFF	SQUELCH VR	MIN
ALC/RF SW	RF	AF GAIN VR	MIN
ATT SW TS-711A/E	OFF	RÉ GAIN VR	MAX
ACC SW TS-811A/B/E	OFF	MIC GAIN VR	MIN
SELECT SW K,M,X	OFF	TONE SW	OFF
TONE SW	OFF	MODE SW	FM
IF SHIFT VR	CENTER		ļ

Table 11

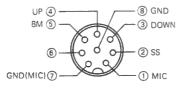


Fig. 17 MIC terminals (view from front panel side)

- Use an insulated adjusting rod to adjust trimmers and coils.
- To prevent damaging SSG, never set the stand by switch to SEND while adjusting the receiver section.
- Be sure to turn the power switch OFF, before connecting the power cable to a power source.
- SSG output levels are those at the time the output terminal is open.
- Meter and display section should be set as follows Fig. 18 or 19.



Fig. 18 Meter and display section (TS-711A/E)



Fig. 19 Meter and display section (TS-811A/B/E)

TS-711 ADJUSTMENT

TS-711A/E TX/RX Section (Common)

CW Clockwise, CCW: Counterclockwise

		Measurement Adjustment Test						
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
. Reset	1) Set the power SW on, while depressing the A=B key. Then release the A=B key.							VFO A 144.000 MODE : CW The "Beeper" sounds
2. Voitage adjustment (1)	 Connect the AC power cable to the power terminal on the rear panel. 					! 		
	2) POWER SW : ON	DVM	AVR	D4	AVR	VR1	13.8V	±0.1V
AVR				97	-	VR2	9.0V	±0.1V
(2) AGC voltage	1) RF GAIN . MAX	DVM	DISP (B/8)	RG2	DISP (B/8)		4,0V	±0.1V
(3) RF OUT-	1) RF POWER : MIN STBY : SEND	DVM	1F	W28 (Jumper	DISP (B/8)	VR7	2.0V	±0.05V
FOT VOILage	2) RF POWER : MAX STBY : SEND			wire)			3.4V	±0.2V
3. PLL	1) SF level adjustment MODE SW: FM FREQ.: 145.0000	RF V.M	PLL	SF (3-1)	PLL	L44	Adjust the core for the MAX reading, then turn it outward until a reading of 0.4V is obtained.	0.4V±0.01V
	2) 20.48MHz level adjustment MODE SW: FM FREQ::145.0000			TP9	1	L45,46	MAX	0.4-0.5V
	3) 4F (40.96MHz) level adjustment MODE SW : FM FREQ. : 145.0000			4F (3-4)		L47,48	MAX	0.10-0.15
	4) 51.2MHz fevel adjustment MODE SW: FM FREQ.: 145.0000			TP8	٦ . إ	L39,40	MAX	0.10-0.15V
	5) B loop VCO adjustment MODE SW : FM FREQ. : 145.0000	DC V.M		TP7		L33	5.5V	±0.1V
	: 144.9999	٦		!				2.0-3.5V
	6) 11.025MHz level adjustment MODE SW : FM FREQ. : 145.010	RF V.M	1	TP4		L9	MAX	0.15-0.18
	7) 31.505MHz level adjustment MODE SW : FM FREQ. : 145.010			TP3		L57	Adjust the L5 and L7 for the MAX reading repeatedly.	0.10.15V
	8) A loop VCO adjustment MODE SW : FM FREQ. : 144.0000	DC V.M	- 	TP6	1	TC2	6.3V T,W 5.1V K,M1,M2,X	±0.1V
	: 145,9999 T,W : 148,0000 K,M1,M2	, X		†	!			5 2-6.0V 1.8-3.8V
4. PLL output		RF V.M	PLL	TP2	PLL	L4	MAX	0.14-0.15V
un output	FREQ.: 145 9999 T,W : 146.0000 K,M1,M2	2,X		TP1		TC1	MAX	0,45-0.58V
5. CAR	1) MODE SW: USB IF SHIFT VR: Center	RF V.M	PLL	TP5	PLL	L13	Turn the core outward until a reading of 0.3V is obtained. Confirm the peak point.	0.3 ± 0.01V
	MODE SW : LSB	-1	!	į			Confirm	0.3 ± 0 02V
	MODE SW : FM	7		ì	F	-+		0.3 ± 0.03V
	2) MODE SW : USB		1	 	PLL	TC3	10 69650M~4z	±100Hz
1	: LSB		[1	1	TC4	10.69350M→z	±100Hz

TS-711A/E

TS-711 ADJUSTMENT

	Condition	Me	asureme	nt		Ad	justment	
ltem		Test	Unit	Terminal	Unit	Part	Method	Specification/Remarks
5. CAR	3) MODE SW : LSB	f.counter	PLL	TP5	PLL	VR1	10.69350MHz	±100Hz
o. CA11	(SEND) . CW		!	į.		VR2	10.69570MHz	±100Hz
	: FM		1		1	VR3	10.69500MHz	±100Hz
6. IF SHIFT check	1) MODE SW : USB	f.counter	PLL	TP5			Turn the IF SHIFT all the way CW and	±1.0kHz or greater Not work on FM mode.
Check	2) MODE SW : LSB		-		İ		ccw.	Does not change
7. TCXO f. adjustmen (Tempera-	1) MODE SW : USB	f,counter	PLL	TP8	PLL	(TC XO)	51.200000MHz	±10Hz
ture conse- quence crystal osciliator)								

TS-711 A/E RX Section

		Mea	asureme	nt		Adj	ustment	
item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Helical	MODE SW : FM Connect the Sweep G, to the ANT terminal	Sweep G. Oscillo- scope Detector	1171	TP1	RF	O OSCI VER	Adjust the L1 and L2 as waveform as shown on right.	(K,M1,M2,X) 144 146 148 (T,W) 144 145 146
2. 4F level adjustment (40,96MHz)	1) MODE SW : FM RX	RF V.M	IF	D1 (cathode)	1F	L1-3	MAX (0.9V)	0.8V or greater
3. IF GAIN (1)	1) MODE SW : FM	SSG			RF	1,3,5,6	Adjust the each coil	Maintain the SSG output
(FM MODE)		Oscillo- scope AF V.M			iF	L24. 28,29	for MAX S-meter reading repeatedly.	level to about the "3" S-meter reading.
	SSG DEV . 5kHz	S-meter				L33	MAX AF V.M reading.	
4. IF GAIN (2) (CW MODE)	1) MODE SW : CW VFO : 145.0000 SSG : -10dBµ VR6 : O.TP	SSG Oscillo- scope AF V.M			IF	L23	Adjust the L23 CCW to the -2dB point from MAX. AF V.M reading.	
	VR6					L13— 15, 20—22	Adjust the L13-15, L20-22, for MAX S-meter reading repeatedly.	Maintain the SSG output level to about the "3" S-meter reading.
	2) MODE SW : FM VFO : 145,0000 SSG : 10d8µ				RF	L3,5	MAX	
	3) MODE SW CW VCO : 145 0000 SSG -10dBµ	4			IF	L23	Adjust the L23 CCW to the -2dB point from MAX AF V.M reading.	-
5. S-meter (1) (CW, SSB)	1) MODE SW CW SSG output : OFF				IF	VR4	Adjust to the "0" S-meter reading on RF meter scale.	

TS-711 ADJUSTMENT

		Mea	sureme	nt	1	Adj	ustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
5. S-meter (1) (CW, SSB)	2) SSG: 20dBµ Adjust the SSG frequency to the MAX S-meter reading.	SSG AF V,M Oscillo-			IF	VR5	"S-9"	
	3) SSG : OdBµ	scope				L14	Adjust the L14 CCW to the "S-3" reading.	Adjust the L14 to MAX, if S-meter does not read the "S-3".
	4) SSG : 20dBµ					VR5	"S-9"	
6. S-meter (2) (FM)	1) MODE SW : FM VFO : 145.000 SSG : 36dBµ SSG MOD : 1kHz SSG DEV : 5kHz	SSG AF V.M Oscilio- scope			IF	VR9	"S-10" 1 3 5 7 9 0 2 4 6	20 40 60 8 19-ADJ
7. Carrier balance	1) MODE SW : USB RF GAIN : MIN (After confirm RF GAIN : MAX)	RF V.M	IF	TP3	IF	TC2	Adjust to the dip point.	
8. NB	1) MODE SW : CW VFO : 145.0000 SSG : 10dBµ	DC V.M	1F	TP4	iF	L25,27	MIN	
9. SSG squelch	1) MODE SW : CW VFO : 145,0000 SSG : OdB SQ VR : MAX Adjust the SSG frequency to MAX AF V.M reading.	SSG Oscillo- scope AF V.M			IF	VR6	Adjust the VR6 slowly and stop at the threshold point.	SQ open : SSG 0-6dB
	2) SSG output : OFF	1					Adjust the SQ VR to the threshold point,	
	3) SSG : -10dBµ	1			i			SQ open
10. SSB/CW S/N	1) MODE SW: LSB VFO: 144.0000 SSG:10dB\mu K,M1,M2,X :12dB\mu T,W	SSG AF V.M Oscillo- scope						S/N 10dB or greater
11. FM S/N	1) MODE SW: FM SSG: -7dBμ K,M1,M2,X :-8dBμ T,W VFO: 144.0000, : 145.0000)T,W : 145.9999' : 144.0000 : 146.0000 k,M1,M2,X	SSG AF V.M Oscillo- scope						20dB or greater

TS-711 A/E TX Section

	i	Measurement				Ad	ijustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method.	Specification/Remarks
1. Setting	Disconnect the coax, cable from the TIF terminal in the IF unit.							
2. IF output	1) RF POWER : MAX MODE SW : CW STBY : SEND IF unit VR7 : Center	RF V.M	IF	TP1	IF	L6- 11,18	Adjust the each coil for the MAX RF V.M reading repeatedly.	(0.3–0.4V)
3. CW CAR level	1) MODE SW : CW STBY : SEND	RF V.M	IF	D18	IF	L8	MAX	0.3V or less
	Connect the coax, cable to the TIF terminal after adjust.			TP1		VR7	0.38V	±0.01V

TS-711 ADJUSTMENT

			suremen	1		Adju	stment	Specification/Remarks
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	
Dr've output	from the D0 terminal in the RF unit. Ther connect	0.6W Power- meter	RF	D0	RF	14-17	for the MAX out- put repeatedly. Connect the coax.	0.25W or greater
	MODE SW : CW STBY : SEND VFO : 145.0000 T,W : 146.0000 K,M1,M2,X			1-2167-05 E04-0102-	05	r meter	cable to the D0 ter- minal after adjust. (adjust the L15 from peak to center position of coil)	
	1) MODE SW . CW STBY : SEND	Power- meter			IF	VR1	Adjust to the mechanical center.	38W or greater
power	VFO: 145,0000 T,W : 146,0000 K,M1,M2,X	(30W or 50W)		!	DISP (B/8)	VR6	26W	±1W
3. ALC meter	1) POWER CONTROL: MAX MIC GAIN VR: MIN MODE SW: USB ALC/RF SW: ALC FREQ.: 145.000	ALC meter		1	IF.	VR2	Adjust to the mechanical zero point.	RF meter "8"
	STBY : SEND 2) MODE SW : CW STBY : SEND				RF	TC2	Adjust for the MAX ALC meter reading.	
	3187.32.40				1F	: VR3	RF "8"	
7. RF meter	1) MODE SW : CW FREQ. : 145.000 ALC/RF SW : RF	RF meter			Final	VR1	RF "8"	RF meter "8"
8. Protection	1) MODE SW : CW	DC V.M	IF	PRO (12)-5)	Final	VR2	MIN	
	2) Connect the ANT terminal to GND.	DC A.M			IF	VR1	: 3.5A	±0.1A
9. Carrier suppression	1) MODE SW: USB, LSB MIC GAIN: MIN POWER CONTROL: MAX	RF V.M Power- meter Oscillo- scope			1F	VR8 TC3	MIN or USB and LSB.	50dB or more
10. SSB frequency response	1) MODE SW: USB, LSB MIC GAIN: Center AG output: Two-tone 2mV, 400Hz, 2600Hz STBY: SEND MIC GAIN VR: 25W	Power- meter (30 or 50W) Oscillo- scope			PLL	TC3 (USB) TC4 (LSB)		Adjust to within -9dB level at the 400Hz and the 2.6kHz from the 1.5kHz Note: Confirm the carrier suppression after this adjustment.
			400H 260CH		1 50	2mV		Adjust to the sharp cross poi
	2) AG output : Single tone 2mV, 1.5kHz MIC GAIN VR : 25W						Adjust for the equal output power at 400Hz, 2600Hz as measured on watt-meter.	
	3) MODE SW : CW STBY : SEND	f.counte	r PLL	TP5	PLL	VR2	10.69570MHz	±10Hz
	4) MODE SW · FM	7		-	1	VR3		±10Hz
11. FM FREQ.	1) Front pane, CH.Q · ON DISPLAY : 145,000 MODE SW . FM STBY . SEND	Power- meter f.counte	DISI		y IF TS 711A	1 ~	Adjust to 145.000 MHz on f.counter.	
		1		1			f counter	

TS-711 ADJUSTMENT

		Mea	sureme	nt		Ad	ustment	
Item	Condition	Test equipment	Unit	Termina!	Unit	Part	Method	Specification/Remarks
2. Deviation	1) PROC : OFF MODE SW : FM FREQ : : 145.000 STBY : SEND AG output : 1kHz, 20mV (30mV K) 2) AG output : 1kHz, 2mV (3mV K)	AG Linear detector		ANT (Directio- ra) coupler)		VR3	4.6kHz	±0.1kHz
13. Speech processor	1) PROC: ON MODE SW: FM FREQ: 145,000 STBY: SEND AG output: 1kHz, 20mV (30mV K)	AG Linear detector			AF	VR2	4.1kHz	±0.1 kHz
14. SSB MIC sensitivity	2) PROC : OFF 1) MODE SW : USB MIC GAIN VR : Center AG output : 1kHz, 3mV	AG Power- meter					Confirm	15W or greater
15. CW	1) MODE SW : CW AF GAIN VR : Center	AF V.M Oscillo-			AF	VR4	Key dawn 0.63V	±0.1V Confirm sidetone output.
sidetone breakin	Connect KEY to KEY jack.	scope			Rear	VR8	Turn the VR8 and check breakin. function.	Delay time : VR8 MIN : Short time MAX : longer time
16. Beep tone	1) SQL VR : Center AF GAIN VR : Center M. IN : 1 push	AF V.M Oscillo- scope			CONT	VA1	0.4V/P-P	±0.1V Confirm tone output.
17. TONE (T)	1) MODE SW : FM TONE SW : ON STBY : SEND	Linear detector f. counte	r			VR1	Shorted wire bet- ween "TH" and "SC" on TONE unit. 1750Hz	DEV : ±2.5xHz ±5kHz
18. TONE (W)	1) MODE SW : FM TONE SW : push (hold)				TONE	VR1	1750Hz	DEV: ±2.5kHz ±5kHz

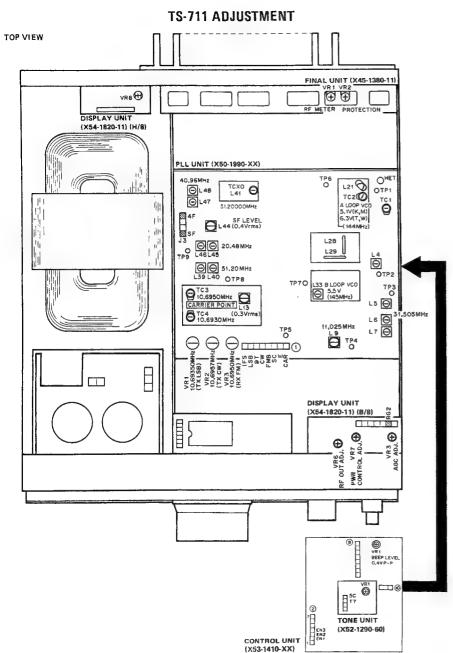
TS-711 A/E ENCODER Section

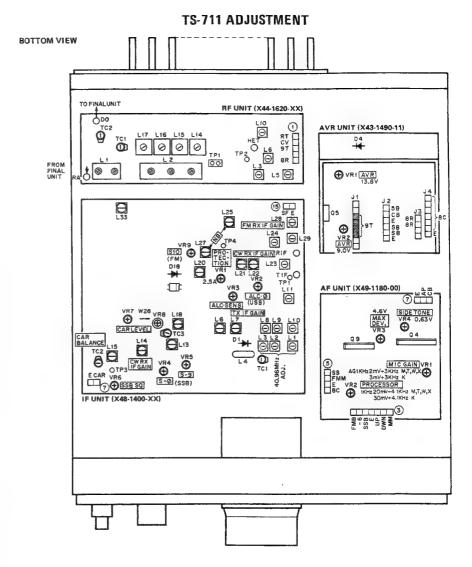
		Mea	suremer	nt .		Adj	ustment	a street manufacture
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Encoder	Remove the VFO knob and motor-drive the encoder at approx. 300rpm.	Oscilio- scope	CONT	EN3		7	CILI	Point C may be located anywhere. When a motor is not available, manually turn the VFO to check the duty ratio.
	2) EN1 duty ratio adjustment : Turn both CW and CCW CW : Clockwise CCW : Counter clockwise		AND AND AND AND AND AND AND AND AND AND	EN1 (② -2)	Enco- der	VR1	C B B C C C C C C C	After adjusting with the VFO control turned CW, check that intervals D and E are also indentical when the VFO control is turned I CCW.
	3) EN2 duty ratio adjustment : Turn in the both directions.	- - - -		EN2 (2-3)		VR2	Adjust until intervals D and E are equal to each other with point C placed at the center	

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TS-811 ADJUSTMENT

TS-811A/B/E TX/RX Section (Common)

CW : Clockwise, CCW : Counterclockwise

			suremer	1		7.13,0	stment	Specification/Remarks	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method		
Reset	1) Set the power SW on, while depressing the A=B key.							VFO A 433,000 MODE : CW The "Beeper" sounds	
, Voltage	Then release the A=B key. 1) Connect the AC power cable			1					
adjustment (1)	to the power terminal on the rear panel.		ĺ	İ					
	2) POWER SW : ON	DVM	AVR	D4	AVR		13.8V 9.0V	±0.1V	
AVR			0100	9T	DISP	VR2	4.0V	±0.1V	
(2) AGC voltage	1) RF GAIN: MAX	DVM	(B/8)	RG2	(B/8)	VNS	4.07		
(3) RF OUT-	1) RF POWER : MIN STBY : SEND	DVM	IF	W28 (Jumper	DISP (B/8)	VR7	2.0V	±0.05V	
	2) RF POWER . MAX STBY : SEND			wire)		1	3.4V	±0.2V	
3. PLL	1) SF level adjustment MODE SW : FM FREQ. : 435.0000	RF V.M	PLL	SF (3-1)	PLL	L44	Adjust the core for the MAX reading, then turn it outward until a reading of 0.4V is obtained.	0.4V±0.01V	
	2) 20.48MHz level adjustment MODE SW : FM FREQ. : 435.0000			TP9		L45,46	MAX	0.4-0.5V	
	3) 4F (40.96MHz) level adjustment MODE SW : FM FREQ. : 435.0000			4F (3-4)		L47,48	MAX	0.100.15V	
	4) 51.2MHz level adjustment MODE SW : FM FREQ. : 435.0000	1		TP8		L39,40	MAX	0,10-0.15V	
	5) B loop VCO adjustment MODE SW : FM FREQ. : 430,0000	DC V.M		TP7		L33	5.5V	±0,1V	
	: 439.9999	1	ĺ					2.0-3.5V	
	6) 11.025MHz level adjustment MODE SW : FM FREQ. : 435.010	RF V.M		TP4		L9	MAX	0.15-0.18V	
	7) 31.505MHz level adjustment MODE SW : FM FREQ, : 435.010				TP3		L57	Adjust the L5 and L7 for the MAX reading repeatedly.	0.1-0.15V
	8) A loop VCO adjustment MODE SW : FM FREQ. :	DC V.M	1	TP6		TC2	6.5V	±0.1V	
	: 430.0000							0.9 2.0V	
4. PLL output		RF V.M	PLL		PLL	L4	MAX	0.14-0.15V	
	FREQ. : 435.0000		HET	TP1		TC1	MAX	0.2V or greater	
5. CAR	1) MODE SW : USB (CAR leve IF SHIFT VR : Center	j) RFV.M	PLL	TP5	PLL	L13	Turn the core outward until a reading of 0 3V is obtained. Confirm the peak point.	0.3±0.01V	
	MODE SW LSB			İ			Confirm	0.3±0.02V	
	MODE SW FM		- 1					0,3±0.03V	
}	2) MODE SW USB		1	1	PLL	TC3	10.69650MHz	±100Hz	
\	1 : LSB	1	1		i	104	10.09JJJOMHZ	=100mz	

TS-811 ADJUSTMENT

			asureme	nt		Adj	ustment	
ftem !	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
5. CAR	3) MODE SW : LSB	f.counter	PLL	TP5	PLL	VR1	10.69350MHz	±100Hz
	(SEND) : CW					VR2	10 69570MHz	±100Hz
	: FM					VR3	10.69500MHz	±100Hz
6. IF SHIFT	1) MODE SW : USB	f.counter	PLL	TP5			Turn the IF SHIFT	±1.0kHz or greater
check	(RX)				ĺ	1	all the way CW and	Not work on FM mode.
	2) MODE SW : LSB						ccw.	Does not change
	(TX)			1				
7. TCXO f. adjustment (Tempera- ture conse- quence	1) MODE SW: USB FREQ.: 439,000	f.counter	HET	TP7	PLL	L41 (TC XO)	286.720000MHz	±30Hz
crystal oscillator)	2)MODE : USB K FREQ. : 441.000				HET	TC3	296.720000MHz	±30Hz
8. HET K type	1) 40.96MHz level adjustment FREQ.: 439.000	RF V.M	HET	TP4	HET	L8,9	MAX. Repeat 2–3 times.	0.4V or more
	2) 286.72MHz level adjustment			TP6		TC2 L10,11	MAX. Repeat 2-3 times. Then, adjust the TC2 for the MAX again.	
	3) 42.38857MHz level adjustment FREQ. : 441.000 IF unit TC3 : Center			TP7		L18,19	MAX. Repeat 2-3 times.	0.4V or more
	4) 296.72MHz level adjustment FREQ.: 439.000			TP6		L20,21		
	: 441.000					TC2	VFO frequency change to 439,000. Adjust same level.	0.3V or more
	5) Helical adjustment Disconnect the coax. cable from the HET terminal in in the PLL unit. Connect the sweep G. (OUT: 25dB) to TP2 in the HET unit, connect the detector to TP3 in the HET unit. HET unit TC1: MAX After adjustment, connect the coax. cable to the HET	Sweep G. Oscillo- scope Detector	"	TP3	- N - T	L4,5	•	400 420
	terminal in the PLL unit.		<u> </u>					
9. HET M,T,W,X	1) 40.96MHz level adjustment	RF V.M	HET	TP5	HET	L8,9	MAX. Repeat 2-3 times.	0.4V or more
type	2) 286.72MHz level adjustment		6 6 d.n. year seeks 's direktele	TP7		TC2- 4, L10	Adjust the TC4, TC2, and TC3. Repeat 2—3 times. Also adjust the TC2,3 again.	0.3V or more
	Helical adjustment Disconnect the coax, cable from the HET terminal in the PLL unit. Connect the Sweep G. (OUT)	Sweep G. Oscillo- scope Detector		TP3	THE PERSON NAMED IN COLUMN 1 AND ADDRESS OF THE PERSON NAMED IN CO	L4,5	Adjust the L4 and L2 as waveform as shown on right.	400 410
	25dB) to TP2 in the HET unit, connect the detector to TP3 in the HET unit.		TPE	100P	- - - - - - -	OSV OSS OSS	• •	\sim
	After adjustment, connect the coax, cable to the HET		1	155	99 x 2	- Can	;	
	terminal in the PLL unit	1		1	1	1	;	

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TS-811 ADJUSTMENT

		Measurement			Adjustment			
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
10. HET	1) PLL VCO OUT level adjustment FREQ. : 435.000	RF V,M	HET	TP1	PLL	TC1	MAX	0.3V or more
	2) HET OUT level adjustment Disconnect the coex. cable from the HET terminal in the HET unit. Connect the power meter to the HET terminal in the HET unit. (HET OUT terminal are connected 500 dummy.)	=(erminal		HET 31-2167- E04-01	02-05	MAX ower meter	(0.1–0.2V)

TS-811A/B/E RX Section

		Mea	sureme	nt		Adj	ustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Helical	MODE SW : FM Connect the Sweep G, to the ANT terminal	Sweep G. Oscillo- scope Detector RFUNITO	RF	TP4	OSCILLO VER	L13,14	-	x,T,W 440
!	; ;	GND C	18899	<u></u>	GND			\
2. 4F level adjustment	1) MODE SW : FM RX	RF V.M	IF	D1 (cathode)	IF	L1-3	MAX (0.9V)	0.8V or greater
(40.96MHz)		1	PLL	4FH				
3. IF GAIN (1) (FM MODE)	1) MODE SW : FM VFO : 435.0000	SSG Oscillo-			RF	L15,17 TC3	Adjust the each coil for MAX S-meter	Maintain the SSG output level to about the "3"
	SSG : 10dB# SSG MOD : 1kHz	scope AF V,M			IF	L24. 28,29	reading repeatedly.	S-meter reading.
	SSG DEV : 5kHz	S-meter				L33	MAX AF V.M reading.	
4. IF GAIN (2) (CW MODE)	1) MODE SW : CW VFO : 435.0000 SSG : -10dBµ VR6 : Q TP	SSG Oscillo- scope AF V.M			IF	L23	Adjust the L23 CCW to the -2dB point from MAX. AF V.M reading.	
	₩ VR6					L13— 15, 20—22	Adjust the L13-15, L20-22, for MAX S-meter reading repeatedly.	Maintain the SSG output level to about the "3" S-meter reading.
	2) MODE SW : FM VFO : 435.0000 SSG : 10d8#				RF	L15,17	MAX	
	3) MODE SW : CW VCO : 435,0000 SSG : -10d8µ				IF	L23	Adjust the L23 CCW to the -2dB point from MAX AF V.M reading.	
5. S-meter (1) (CW, SSB)	1) MODE SW : CW SSG output : OFF				IF	VR4	Adjust to the "0" S-meter reading on RF meter scale.	
	2) SSG 20dBµ Adjust the SSG frequency to the MAX S-meter reading.	Oscillo-				VR5	"S-9"	
	3) SSG . 0aBµ	scope				L14	Adjust the L14 CCV to the "S-3" reading.	Adjust the L14 to MAX, if S-meter does not read the "S-3".
}	4) SSG . 20dBµ	7	1	1	1	VR5	"S 9"	

TS-811 ADJUSTMENT

		Mea	sureme	nt		Adj	ustment	
Item		Test equipment	Unit	Terminal		Part	Method	Specification/Remarks
6. S-meter (2) (FM)	1) MODE SW: FM VFO: 435,0000 SSG: 30dB SSG MOD: 1kHz SSG DEV: 5kHz	SSG AF V.M Oscillo- scope			ŧF	VR9	1 3 5 7 9 0 2 4 6	20 40 60 8 10 ADJ
7. Carrier balance	1) MODE SW: USB RF GAIN: MIN (After confirm RF GAIN: MAX)	RF V.M	ŧF	TP3	IF	TC2	Adjust to the dip point.	
8. NB	1) MODE SW : CW VFO : 435.0000 SSG : 10dB#	DC V.M	IF.	TP4	IF.	L25,27	MIN	
9. SSG squelch	1) MODE SW: CW VFO: 435.0000 SSG: 0dB SQ VR: MAX Adjust the SSG frequency to MAX AF V.M reading.	SSG Oscilio- scope AF V.M			iF	VR6	Adjust the VR6 slowly and stop at the threshold point.	SQ open : SSG 0-6dB
	2) SSG output : OFF						Adjust the SQ VR to the threshold point.	SQ open
10. SSB/CW S/N	3) SSG: -12dBµ 1) MODE SW: LSB VFO: 430.0000 SSG: -10dBµ K,M,X : -12dBµ T,W	SSG AF V.M Oscillo- scope						S/N 10dB or greater
11. FM S/N	1) MODE SW : FM SSG : -7dβμ K,M,X : -8dβμ T,W VFO : 430.0000 : 435.0000 T,W : 439.0000 : 430.0000 K,M,X	SSG AF V.M Oscillo- scope						20dB or greater

S-811A/B/E		Mea	sureme	nt		Adj	ustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Setting	Disconnect the coax, cable from the TIF terminal in the IF unit.							430 450 K
2. Helical	1) Connect the sweep G. (OUT : 20dB) to TP1. RF unit TC1 : MAX Disconnect the coax. cable from the HET terminal.	Sweep G. Oscillo- scope Detector	RF	TP2	L5-7	A SERVICE AND A	NG	430 440 M,T,W,X
3. IF output	1) RF POWER: MAX MODE SW: CW STBY: SEND IF unit VR7: Center	RF V.M	1F	TP1	IF	L6- 11.18	Adjust the each coil for the MAX RF V.M reading repeatedly.	(0.30.4V)
4. CW CAR	1) MODE SW : CW STBY : SEND	RF V.M	IF	D18	1F	L8	MAX	0.3V or less
	Connect the coax, cable to the TIF terminal after adjust.			TP1		VR7	0.38V	±0 01 V

TS-811 ADJUSTMENT

7			suremen	VE.		Adju	stment	Consideration (Passes)
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
5. Drive output	the first the division to the contract of	0 6W Power- meter O terminal		D0	05	TC1,2	Adjust the each coil for the MAX output repeatedly. Connect the coax. cable to the D0 terminal after adjust. (adjust L15 peak to center position of coil)	0.30W or greater
	1) MODE SW : CW	Power-			IF	VR1	Adjust to the mechanical center.	32W or greater
power	STBY: SEND VFC: 439.9999 M,T,W,X : 449.9999 K	(30W or 50W)			DISP (B/8)	VR6	26W (Setting value)	±1W, 7.5A or less
7. ALC meter	1) POWER CONTROL: MAX MIC GAIN VR: MIN MODE SW: USB ALC/RF SW: ALC FREQ.: 145.000 STREY: SEND 2) MODE SW: CW	ALC meter			IF RF	VR2	Adjust to the mechanical zero point. Adjust for the MAX	RF meter "8"
	STBY : SEND			ì	IF	VR3	ALC meter reading.	
8, RF meter	1) MODE SW : CW FREQ. : 435.000 ALC/RF SW : RF	RF meter			Final	VR1	RF "8"	RF meter "8"
9. Protection	1) MODE SW : CW	DC V.M	IF	PRO (12-5)	Final	VR2	MIN	
	2) Connect the ANT terminal to GND.	DC A.M			1F	VR1	4.0A	±0.1A
10. Carrier suppression	1) MODE SW: USB, LSB MIC GAIN: MIN POWER CONTROL: MAX	RF V.M Power- meter Oscillo- scope		a company of the comp	IF	VR8 TC3	MIN or USB and LSB.	50dB or more
11. SSB frequency response	1) MODE SW: USB, LSB MIC GAIN: Center AG output: Two-tone 2mV, 400Hz, 2600Hz STBY: SEND MIC GAIN VR: 25W	50W) Oscillo- scope	1 400H	12 (~) W -	J ₹ 56	TC3 (USB) TC4 (LSB)		Adjust to within –9dB level at the 400Hz and the 2.6kHz from the 1.5kHz Note: Confirm the carrier suppression after this adjustment.
			1	10kΩ	, ,	1		Adjust to the sharp cross poin
	2) AG output : Single tone 2mV, 1.5kHz MIC GAIN VR : 25W					TC3 (USB) TC4 (LSB)	400Hz, 2600Hz as	
	3) MODE SW : CW STBY . SEND	f.counter	PLL	TP5	PLL	VR2	10.69570MHz	±10Hz
	4) MODE SW : FM		1		1	I VR3	10.6950MHz	
12 FM FREQ.	1) Front panel CH.Q . ON DISPLAY: 435 000 MODE SW: FM STBY: SEND	Power- meter f.counter	DISP (D/8)		/ IF TS-811A/i	TC1	Adjust to 145.000 MHz on f.counter.	±10Hz
\				ì	1	.1	f counter	

TS-811 ADJUSTMENT

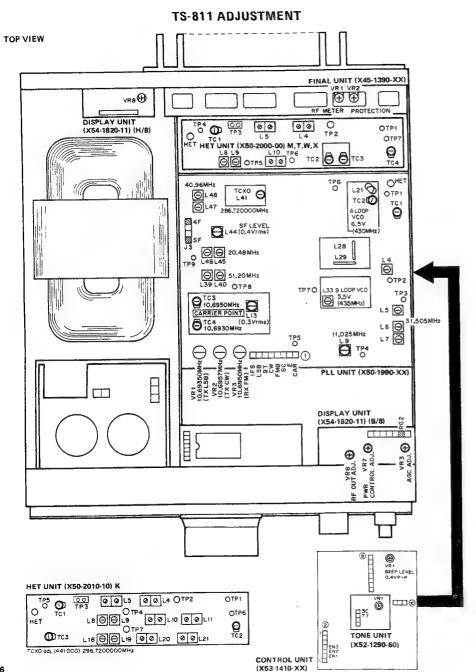
		Mea	sureme	nt		Ad	ljustment	
Item	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
13. Deviation	1) PROC : OFF MODE SW : FM FREQ. : 435.000 STBY : SEND AG output : 1kHz, 20mV (30mV K)	AG Linear detector		ANT (Directio- nal coupler)	AF	VR3	4.6kHz	±0.1kHz
	2) AG output : 1kHz, 2mV (3mV K)					VR2	3kHz	±0.1kHz
14. Speech processor	1) PROC : ON MODE SW : FM FREQ. : 435,000 STBY : SEND AG output : 1kHz, 20mV (30mV K)	AG Linear detector			AF	VR2	4.1kHz	±0.1kHz
	2) PROC : OFF						1	
15. SSB MIC sensitivity	1) MODE SW : USB MIC GAIN VR : Center AG output : 1kHz, 3mV	AG Power- meter					Confirm	15W or greater
16. CW side tone	1) MODE SW : CW AF GAIN VR : Center	AF V.M Oscillo-			AF	VR4	Key down 0.63V	±0.1V Confirm side tone output.
breakin	Connect KEY to KEY jack.	scope			Rear panel	VRS	Turn the VR8 and check break in function.	Delay time : VR8 MIN : Short time MAX : longer time
17. Beep tone	1) SQL VR : Center AF GAIN VR : Center M. IN : 1 push	AF V.M Oscillo- scope			CONT	VR1	0.4V/P-P	±0.1V Confirm tone output.
18. TONE (T)	1) MODE SW : FM TONE SW : ON STBY : SEND	Linear detector f. counter			TONE	VR1	Shorted wire bet- ween "TH" and "SC" on TONE unit. 1750Hz	DEV : ±2.5kHz ±5kHz
19. TONE (W)	1) MODE SW : FM TONE SW : push (hold)				TONE	VR1	1750Hz	DEV: ±2.5kHz ±5kHz

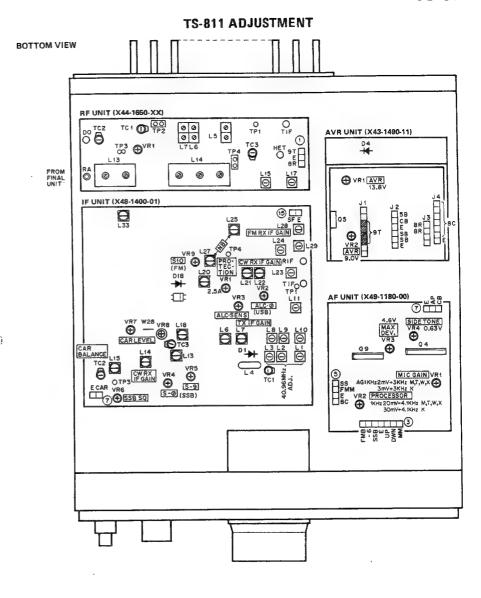
TS-811A/B/E ENCODER Section

	1	Me	asureme	nt		A	djustment	
İtem	Condition	Test equipment	Unit	Terminal	Unit	Part	Method	Specification/Remarks
1. Encoder	Remove the VFO knob and motor-drive the encoder at approx. 300rpm.	Oscillo- scope	CONT	EN3 (② -4)			, C, III	Point C may be located anywhere. When a motor is not available, manually turn the VFO to check the duty ratio.
	2) EN1 duty ratio adjustment : Turn both CW and CCW CW : Clockwise CCW : Counter clockwise			EN1 (2)-2)	Enco- der	VR1	C	After adjusting with the VFO control turned CW, check that intevals D and E are also indentical when the VFO control is turned CCW.
	EN2 duty ratio adjustment : Turn in the both directions.	,		EN2 (2.3)		VR2	Adjust until intervals D and E are equal to each other with point C placed at the center.	

TS-811A/B/E

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ADJUSTMENT

TS-711A/E, TS-811A/B/E

Microprocessor operation check

Condition Coeration of the power SW ON, while depressing the A=B key. Then release the A=B key. Then release the A=B key. If \$\frac{1}{2} \frac{2}{3} \frac{1}{3}	() () Inds. ck position.
while decressing the A=B key. Then release the A=B key. Then release the A=B key. MODE SW: CW LED light on. The "Beaper" sou Encoder is the clike function (FM, Note: If decress same USB. CW LSB. CW LSB. morse code continuously	nds.
key. Then release the A=B key. MODE SW : CW LED light on. The "Beapper" sou Encoder is the clic	nds.
the A=B key. WODE SW: CW LED light on. The "Beeper" sou Encoder is the click function (FM, USB. CW LSB. MODE key then same LSB. MoDE key then same LSB. MoDE key then same LSB. MoDE key then same LSB. MoDE key then same LSB. MODE key then same	nds.
MODE SW: CW LED light on. The "Beeper" sou Encoder is the clic 2. MODE function (FM, USB, CW USB, CW LSB. MODE kex.: CW: "C" morse of Ex.: FM USB	nds. ck position.
LED light on. The "Beeper" sour Encoder is the clic 2. MODE function (FM, USB, CW USB, CW LSB, MoDE key then same LSB, MoDE key then same LSB, MoDE key then same LSB, MoDE key then same LSB, MoDE key then same LSB, MoDE key then same LSB, MODE key then same LSB, MODE key then same LSB, MODE key then same LSB, MODE key then same	k position.
LED light on. The "Beeper" sour Encoder is the clic 2. MODE function (FM, USB, CW LSB, Wote: If depress same MODE key then same MODE key then same LSB. Mores code continuously LSB. LSB	k position.
2. MODE function (FM, USB, CW LSB, CW	k position.
2. MODE function (FM, Note: If depress same USB, CW LSB, morse code continuously LSB - LSB.	k position.
2. MODE function (FM, USB, CW LSB, CW LSB, CM code continuously LSB, CM CM LSB, CM CM CM CM CM CM CM CM CM CM CM CM CM	
function (FM, Note: If depress same USB, CW MODE key then same LSB, morse code continuously LSB	
(FM, Note: If depress same USB	
USB, CW MODE key then same CW LSB, morse code continuously LSB	
LSB, MODE key then same	
LSB, morse code continuously	
AUTO)	
3. Encoder 1) MODE SW : FM (push STEP LED K,M1,M2	X TW
once) Turn the main dial	12 5kHz
knob to CW and CCW. ON 5kHz	
OIN SKILL	1000
4. CH.Q 1) Push the CH.Q key once. The plunger soun	ds.
(Channel Display :	
quick) VFO A 144.000	.0 - 100Hz
quick) VFO A 144.000 VFO B 434.000	.0 order
Release click fun	ction on
VFO knob.	
5. A/B 1) Push the A/B key once The plunger sour	nds.
5. A/B 1) Push the A/B key once The plunger sour	
Display :	
144.0	0.0.0
4 to 0.0	
930.0	UU.U
MODE SW : CW	AUTO
LED light on.	
2) Push the A/B key again. 146 5.0	00
ŶĬ3 3,0	
755.6	00
6. STEP 1) Push the STEP key once. The "Beeper" so	unds.
STEP LED (ora	
27 1011 110 11011 0101	
	J d5 U1
STEP off.	
4) Push the STEP key again STEP LED light	
(STEP function	
The "Beeper" s	
7. SPLIT 1) Push the SPLIT key once The "Beeper" s	
111 111 1111 1111 1111 1111 1111 1111 1111	light on.
(VFO A and VFO B fre- Display : SPLIT	
quency works for both Ex. :	5.17
quency works for both Ex. :	200
quency works for both Ex.:	7 <i>00</i>
quency works for both Ex.:	0 0 0 7 0 0 0
quency works for both Ex.: TX and RX) Transmitt TY 9.	7000
quency works for both Ex.: TX and RX) Transmitt A 49 5 4 4 5 4 4 5 4 5 5 6 6 6 6 6 6 6 6 6 6	วัดดด วัดด
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quency works for both Ex.: TX and RX) Transmitt A 49 5 4 4 5 4 4 5 4 5 5 6 6 6 6 6 6 6 6 6 6	7000
quency works for both Ex.: TX and RX) Transmitt Ty 7 5 5	វិខេ <i>ច</i> វិខេ <i>ច</i> វិខេខ
quency works for both Ex.: TX and RX) Transmitt A 3 5. 4 7 5. 2) Push the SPLIT key again Display : SPLIT) 0 0 0 0 0 0 0 0 0 0 T light off.
quency works for both Ex.: TX and RX) Transmitt Ty 7 5 5) 0 0 0 0 0 0 0 0 0 0 T light off.
quency works for both Ex.: TX and RX) Transmitt) 0 0 0 0 0 0 0 0 0 0 T light off.
quency works for both Ex.: TX and RX) Transmitt A 3 5. 4 7 5. 2) Push the SPLIT key again Display : SPLIT) 0 0 0 0 0 0 0 0 0 0 T light off.

				Operation check			
	Item	Cond		The "Beeper" s			
	A=B	1) Push the A=	B key once.	Ex. VFO A:1			
	(VFO A		TC	711 VFOB: 1			
	and VFO		15	711 4708.1			
	B become		TC	811 VFO A : 4	35,000		
	same fre-		13	VFOB:4			
	quency)			VI 0 0 . 4			
			(5)	The "Beeper" s	rounds		
		2) Push the A	/B key once	Display change			
				and shows sam			
		1		as VFO A.			
_		-		The "Beeper"	counds		
9	сом сн	1) Push the C	OM key once.	COM LED : Li			
		1		COM CED . E	igitt oit		
				Display :			
				1			
		ì		145.	000		
				A ===	000		
		i		433	.0 0 0		
				In case COM C	CH working,		
		1		the main dial			
		1		CH.Q, A/B ST			
				SCAN and M.			
		1		are not work.			
h	0. MHz	1) Push the f	MHz SW (UP)	UP MHz orde	r 1MHz each		
ľ	O. WII 12	one by on		or push.			
ı		1		The "Beeper"	' sounds each		
Į		1		push.			
ı		2) Push the l	MHz SW (UP)	UP MHz orde	r		
l		continuo		continuously			
l		3) Push the	MHz SW	Down MHz o	rder 1MHz		
l			one by one.	each one pust	h.		
ı				The "Beeper"	' sounds each		
1		_		push.			
l		4) Push the	MHz \$W	Down MHz o	order		
l		(DOWN)	continuously.	continuously.			
t	11. SCAN	1) MODE S	W : SCAN push	The "Beeper			
1		once.		The dot poin	it light winks.		
1	SCAN Step	. !			after 6 seconds.		
١		Display 5 digit	Display 5 digit	Display 6 digit	Display 6 digit		
1			STEP ON		STEP : ON		
1	FM	20kHz step	10kHz step	5kHz step	5kHz step		
١	CW, SSB	5kHz step	1kHz step	1kHz step	1kHz step		
١			SENIO	Stop SCAN			
1		2) STBY :			· · · · · · · · · · · · · · · · · · ·		
١			art : Push SCAN				
		again.		(SCAN stop)			
1			M,IN key once	. The "Beeper			
	(Write	(Desire 1	requency)	(Memorized			
1		-		with any mo	nas memorized		
		-					
1		2) MODE S	SW : CH.S push	The "Beepe			
		once.			orks only on		
			ain dial CW.		Changes only		
		Ex. Set	to	on M.CH dis	shieà.		
				1			
		2) 14005	SW . CH. S push	The "Beepe	r" sounds		
		again.	ovv . Cm. o push		vorks as VFO		
		again.		knob)			
		A) Morro	o un to 40 chan	nel Tne "Beepe	er" sounds each		
	1	41 (45)	in up to 40 chair	M IN, CH.	C much		
	1	followin	ng 1), 2) 3)		a pusii.		

ADJUSTMENT

TS-711A/E, TS-811A/B/E DCS (Digital Code Squelch) system operation check

		Operation check	item	Condition	Operation check
13, Memory	Condition 1) Recall memorized fre-	The "Beeper" sounds.	1. Digital	1) Display . any	The "Beeper" sounds.
(Recall)	quency at item 12. Push the VFO/M key	Display:	code	Push the CS key once	Display : C 0
	once.	18 1 4 3 3.0 3 O		!	(Digital code has 5 digits and can input 9 kind)
		Which is MEMO IN on CH1		2) Digital code input MODE SW . FMCH.S	1 2 3 4 5 F M USB C W LSB AUTO 6 7 8 9 0
	2) Tuning the main dial	Display shows memorized CH and frequency.		nas dual function as digital code and each key	SCAN M.IN REVAL A L CH.S
	3) Push the VFO/M key again.	The "Beeper" sounds Display shows VFO frequency.		works ; FM : 1—CH.S : 0	Each one input makes "Pi" sound and each 5 digit input makes "Pee" sound.
14. M≯V	Transfer MEMO frequency to VFO. Ex. MEMO frequency	1 Display 8 / 144.800		Turn main dial one click CW, and input digital code following step 2).	Display : C / 00000
	: 144.800 : 433.800 VFO A frequency	a : 4 3 3.8 0 0 The "Beeper" sounds.		4) Input digital code for \$\inc \mathcal{C} \color \inf \mathcal{G}\$ turning main dial.	Confirm "Pee" sound at each 5 digit input.
	: 144.000 : 434.000 Push the MPV key once.	2 Display 144.000 434.000		5) Push the D.SQ key when digital code has displayed.	C. Dot light winks. If push the D.SQ key again, this dot has disapear.
15. Fre- quency	1) MODE SW : REV & LOCK push once.	Display has transfer 1 to 2 The "Beeper" sounds. REV & LOCK LED light on.	2. Call sign input	1) Push the C.AL key while digital code has displayed. 2) Push the C.AL key again.	The "Beeper" sounds. C - 0 0 0 0 0 0 1st 2nd 3rd
quality	2) Turn main dial CW and CCW.	Confirm the display does not change.			C = 000000 4th 5th 6th
	3) MODE SW : REV & LOCK push again.	The "Beeper" sounds. REV & LOCK LED light off. (Freq. lock free)			Ex.: J A 1 Y K X ↑ ↑ ↑ ↑ ↑ ↑ 74 65 49 89 75 88
16. Alert (AL)	1) MODE SW : AL push once	The "Beeper" sounds. Display shows AL.	3. DCS system	Set monitor's radio to condition below.	
	2) RX : 6 seconds each	Confirm the "Beeper" sounds.		Digital code : 6 7 8 9 0 MODE SW : FM DCS : ON	
	3) MODE SW : AL push again	The "Beeper" sounds AL sign disapear.		2) MODE SW : FM VFO : 146.0000 Push the DCS key once.	DCS LED light on.
				3) Push the CS key once. Push the 6,7,8,9,0 key each time. Push the CS key once after checks.	CO 6 7 8 9 0
				4) Push the D.SQ key once. SQL VR : MIN	D.SQ LED light on. Squeich closed.
				5) Push the C.AL key once. Monitor: SEND Push the C.AL key once after check.	C. AL LED light on, Squelcn opened. D. SQ LED light off. The "Beeper" sounds. (Monitor's radio: "Beeper" sounds heard during trans- mt.)
				6) STBY . SEND	"Beeper" sounds heard , when TX.
			J L		

RX SECTION 30,265MHz 0.63V 105dBµ 78dBu 49dBu 27dBp 42dBy 11dBµ 30.265MHz ---15dBµ(FM) 52dBµ(FM) 77dBµ(FM) 20dBu[FM] 8dBu[FM] (6dBu[FM] 8dBu[FM] -8dBy(FM1 -6dBu (FM) AF UNIT

 First, set the AF gain control for an audio output of 0.63V/8Ω for an SSG input signal at 145.1MHz/-6dBμ, applied to the antenna terminal, the AF gain control is now fixed. Thereafter, only the SSG signal level injected at each point is varied, as required to obtain the same audio output.

RF UNIT(X44-1620-XX)

- In the FM mode, the SSG signal level at each point required to obtain the same S/N ratio as that at initial input of the reference – 6dBμ is taken.
- 3. In the stages after the product detector, the AF output level is measured.

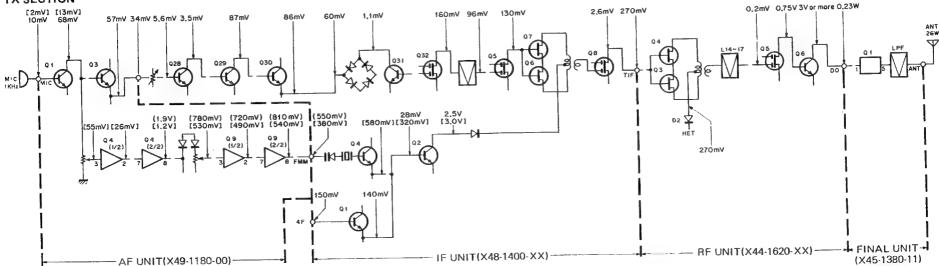
IF UNIT(48-1400-XX)

 Level measurement is made with a 0.01μF titanium oxide porcelain capacitor connected to the SSG output.

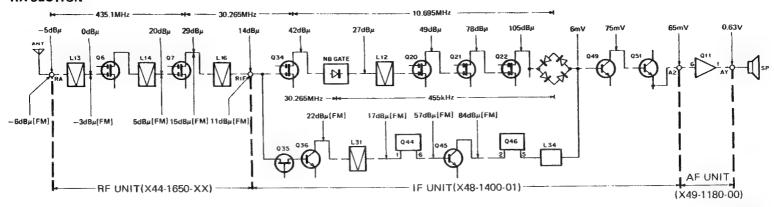
(X49-1180-00)

5. For level measurement at the RA terminal point, the SSG cable connection is changed to this terminal.



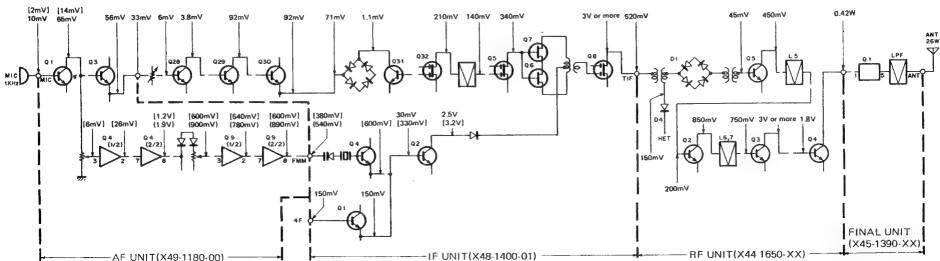


- 1. Frequency: 145.10MHz
- 2. For level measurement before pin DO in the RF unit, the coaxial cable connected to pin DO is disconnected.
- 3. In IF & RF sections, measurements are taken by an RF VTVM in the CW mode. In AF sections, it is taken by an AF VTVM in the USB mode. In this case, the values in [] are with the FM mode processor OFF, and those in () are with the FM mode processor ON.
- 4. The audio input voltage in the USB mode, is a 1kHz signal tone which gives a nearly full-scale reading within the ALC range. In the FM mode, it is that which gives the standard modulation degree (± 3kHz deviation).



- First, set the AF gain control for an audio output of 0.63V/8Ω for an SSG input signal at 435.1MHz/-6dBμ, applied to the antenna terminal, the AF gain control is now fixed. Thereafter, only the SSG signal level injected at each point is varied, as required to obtain the same audio output.
- In the FM mode, the SSG signal level at each point required to obtain the same S/N ratio as that at initial input of the reference — 6dBµ is taken.
- 3. In the stages after the product detector, the AF output level is measured.
- 4. Level measurement is made with a $0.01\mu F$ titanium oxide porcelain capacitor connected to the SSG output.
- For level measurement at the RA terminal point, the SSG cable connection is changed to this terminal.

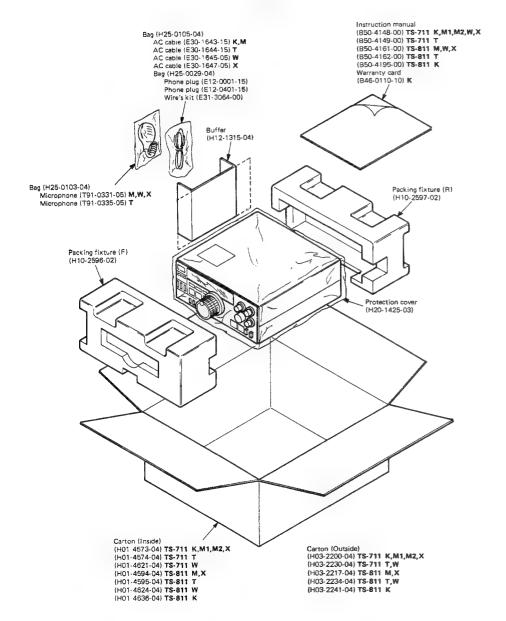
TX SECTION



- 1. Frequency: 435.10MHz
- For level measurement before pin DO in the RF unit, the coaxial cable connected to pin DO is disconnected.
- 3 In IF & RF sections, measurements are taken by an RF VTVM in the CW mode In AF sections, it is taken by an AF VTVM in the USB mode. In this case, the values in [] are with the FM mode processor OFF, and those in () are with the FM mode processor ON.
- 4. The audio input voltage in the USB mode, is a 1kHz signal tone which gives a nearly full-scale reading within the ALC range. In the FM mode, it is that which gives the standard modulation degree (± 3kHz deviation).

TS-711/811

PACKING



TERMINAL FUNCTION

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function
	SWI	TCH UNIT	(X41-1580-XX)
1			
2	1 2 3 4 5 6 7 8	FS FL DC CL CS E BD TL	Frequency STEP LED Frequency LOCK LED DCL LED CHL LED CSQ LED GND (Earth) Busy Display TX LED
3	1 2 3 4 5 6 7 8	FS FL DC CL CS CA BD TL	Frequency STEP LED Frequency LOCK OUT DCL LED CHL LED CSQ LED CALL LED Busy Disolay TX LED
4	1 2 3 4 5 6 7 8 9 10 11 12 13	A1 A2 A3 A4 A5 A6 B0 B1 B2 B3 B4 B5 B6	Port A1 Port A2 Port A3 Port A4 Port A5 Port A6 Port B1 Port B2 Port B3 Port B4 Port B5 Port B6 Port B6 Port B6 Port B7 Port B7 Port B7 Port B7 Port B8 Port B8 Port B8 Port B8 Port B8 Port B8 Port B8 Port B8 Port B8 Port B8
3	1 2 3 4 5 6 7 8 9 10	C5 C4 C3 C2 C1 C0 A6 A5 A4 A3 A2 CA	KEY Line C5 KEY Line C4 KEY Line C3 KEY Line C2 KEY Line C1 KEY Line C1 KEY Line C0 Port A6 Port A4 Port A3 Port A2 CALL LED
6	1 2 3 4 5	E NBS BD 9T E2 E1	GND (Earth) Noise Blanker Switch Busy Display TX 9V RIT ENCODER PULSE 2 RIT ENCODER PULSE 1
Ø	1 2 3 4 5 6 7 8	E ANI MM SS ANI E ANO E	GND (Earth) Analog input MIC MUTE Standby Switch Analog input GND (Earth) Analog output GND (Earth)
8	1 2	ACS RL	Accessory Switch } TS-811 only

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function					
	1	A6	Port A6 KEY SCAN output					
_	2	E	GND (Earth)					
9	3	A5	Port A5 KEY SCAN output					
	4	80	Port B0 KEY SCAN input					
	5	A4	Port A4 KEY SCAN output					
	1	AU	AUTO LED					
10	2	L\$ CW	LSB LED CW LED					
(3)	4	US	USB LED					
	5	FM	FM LED					
	1	FM	FM LED					
_	2	US	USB LED					
10	3	CW	CW LED					
	4	LS	LSB LED					
	5	AU	AUTO LED					
12	1 2	ME	Meter + GND (Earth)					
	1	PRS	Processor Switch					
	2	RM	RF Meter					
	3	ALM	ALC Meter					
}		FSM	FM S Meter					
(3)	5	SM	SSB S Meter					
_	6	SB	Switched B (13.8V)					
	7	RL	Relay					
1	8	ACS	Accessory Switch TS-811 only					
	0	E	GND (Earth)					
AVR UNIT (X43-1490-11)								
	1	TH1	Thermister 1					
1	2	TH2	Thermister 2					
	3	E	GND (Earth)					
	4	9T	TX 9V					
1	5	9T	TX 9V					
	6	9T 9T	TX 9V					
	8	ATX	Anti-TX (No TX when 0V)					
	9	ST	Standby output					
	1	58	B for 5C					
	2	CB	Common B					
2	3	ε	GND (Earth)					
(4)	4	SB	Switched B (13.8V)					
1	5	SB	Switched B (13.8V)					
	6	E	GND (Earth)					
	1	88	RX 8V					
(3)	2	8R	RX 8V					
`	3	8R 8R	RX BV RX BV					
<u> </u>	_		+ 8V					
	1 2	8C 8C	+8V					
1	3	8C	+8V					
4	4	8C	1+8V					
	5	8C	+8V					
	6	8C	+ 8V					
	7	E	GND (Earth)					
(5)	1	В	+ B					
	1	SB FAN	Switched B (13,8V) FAN Motor					
	2	SB	Switched B (13.8V)					
	-							
6	İ		!					
		1						
	<u>. </u>							

TERMINAL FUNCTION

tor Na.	nal No.	Terminal name	Terminal Function						
	1	В	+ B						
	2	FB	FINAL B (13.8V)						
(7)	3	BB	+B (22V) AVR Transistor Base						
_	5	BA EM	AVR Transistor Emitter						
	6	EM	AVR Transistor Emitter						
	1	88							
(8)	2	co	AVR Transistor Collector						
	3	E	GND (Earth)						
	1	В	+ B						
	2	FB	FINAL B (13.8V)						
9	3	BB BA	+B (22V) AVR Transistor Base						
_	, 5	. EM	AVR Transistor Emitter						
	6	EM	AVR Transistor Emitter						
			- 1620-XX) TS-711						
	1	BL	Relay						
	2	CV	Control Voltage						
1	3	9T	TX 9V						
_	4	E	GND (Earth)						
	5	8R	RX 8V						
		UNIT (X4	4-1650-XX) TS-811						
_	1	9T	TX 9V						
1	2	E	GND (Earth)						
	3) 8R	RX 8V						
	FINA		(45-1380-11) TS-711 (45-1390-XX) TS-811						
	1	PRO	Protection						
	2	RM	RF Meter						
1	3	TH1	Thermister 1						
_	4	91	TX 9V						
	5	PC	Power control						
	1 2	EM	AVR Transistor Emitter AVR Transistor Collector						
2	3	CO FB	FINAL B (13.8V)						
	4	BA	AVR Transistor Base						
			(48-1400-XX)						
1	1	4F	4th Frequency						
1	2	E	GND (Earth)						
	1	E	GND (Earth)						
2	2	FMM	FM MIC						
_	3	TO	Tone out (Tone input terminal)						
	: 4	E	GND (Earth)						
	1 2	9T 9T	TX 9V						
	3	CWB	CW +B (8V)						
	4	FMB	FM +B (8V)						
(3)	5	FMR	FM RX +B						
_	6	FCB	FM/CW +B						
	7	88	RX 8V						
i	. 8	88	RX 8V						
	9	SCB	SSB/CW +B (8V) TX 9V						
	1 2	; 9T CWT	CW TX +B (8V)						
	. 3	: NC	Not connection						
•	4	FMB	FM +B (8V)						
4	, 5	8C	+8V						
	1								

Connec- tor No.	Termi nal No.	Terminal name	Terminal Function
tor No.	1	SCR	SSB/CW RX + B
	2	SCR	SSB/CW RX + B
(6)	3	-6	_6V
(5)	4	8C	!+8V
Ì	5	8C	+8V
	6	SM	SSB S Meter
	1	SSB	SSB + B
	2	SSB	SSB + B
6	3	RG2	RF Gain volume 2
	4	Ε	GND (Earth)
	5	SSQ	SSB Squelch
7	1	CAR	Carrier
	2	E	GND (Earth)
	1	MV2	MIC Volume 2
	2	E	GND (Earth)
8	3	FCB	FM CW + B
	5	P1 9T	Power Control 1 TX 9V
	-		
9	1 2	RT E	Modem Receive Output GND (Earth)
<u> </u>		FSM	FM S Meter
	1 2	SC	Scan Control
ì	3	BD	Busy Display
	4	SQ	Squelch Volume
10	5	8C	+8V
"	6		
	7	ļ	
	8		
<u> </u>	9	AL	Alert Mute
0	1 1	KEY	KEY
<u> </u>	2	STS	Side Tone Switch
	1	8C	+8V
12	2 3	SSB ALM	SSB + B ALC Meter
1 15	4	P2	Power Control 2
	5	PRO	Protection
	1	8R	RX 8V
	2	SCR	SSB/CW RX + B
	3	SSQ	SSB Squelch
13	4	E	GND (Earth)
	5	FMR	FM RX + B
1	6	BLK	Blanking Pulse
-	7	NBS	Noise Blanker Switch
13	1	A1	Audio Volume 1
<u> </u>	2	E	GND (Earth)
13	1 2	SF E	Standby Frequency GND (Earth)
<u> </u>		-	4
			(49-1180-00)
	1	8M	MIC 8V
1	2	MIC	MIC AF input
1	3	E UP	GND (Earth) MIC UP
	5	DW	MIC DOWN
	6	SS	Standby Switch
-	1	PRS	+
	1 2	MV1	Processor Switch MIC Volume 1
	3	AN1	Analog input
2	4	E	GND (Earth)
	5	FE	Floating earth
1	1	1	1

TERMINAL FUNCTION

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function						
	1	MM	MIC Mute						
	2	DW	MIC DOWN						
	3	UP	MIC UP						
3	4	ε	GND (Earth)						
_	5	SSB	SSB + B						
	6	6	-6V						
	7	FMB	FM + B (8V)						
	1	8C	+8V						
(4)	2	E	GND (Earth)						
(4)	3	FMM	FMMIC						
	4	SS	Standby Switch						
	1	STS	Sidetone Switch						
	2	STS	Sidetone Switch						
(5)	3	KEY	KEY						
•	4	KEY	KEY						
	5	DE	Delay						
	1								
		ANO	Analog output GND (Earth)						
	2	E A1	Audio Volume 1						
		E A1	GND (Earth)						
(E)	5	A1	Audio Volume 1						
⑥	6	A1 E	GND (Earth)						
		-							
	7	A2 E	Audio Volume 2						
	8		GND (Earth)						
	9	BZ	Beep out						
	1	E	GND (Earth)						
7	2	AP	Audio Power						
	3	СВ	Common B						
	PL	L UNIT ()	(50-1990-XX)						
	1	CAR	Carrier .						
	2	E	GND (Earth)						
	3	8C	+ 8V						
①	4	FMB	FM + B (8V)						
	5	CWT	CW TX + B (8V)						
	6	9T	TX 9V						
	7	LSB	LSB + B (8V)						
		IFS	IF Shift Voltage						
	8	115							
	-	CP	PLL Clock						
	1		PLL Clock PLL Data						
	1 2	CP	PLL Data						
2	1 2 3	CP DP EA	PLL Data PLL A Enable						
2	1 2 3 4	CP DP EA EB	PLL Data PLL A Enable PLL 8 Enable						
2	1 2 3 4 5	CP DP EA EB	PLL Data PLL A Enable PLL 8 Enable GND (Earth)						
2	1 2 3 4 5 6	CP DP EA EB E CV	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage						
	1 2 3 4 5 6	CP DP EA EB E CV	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voitage Standard Frequency						
2	1 2 3 4 5 6	CP DP EA EB E CV	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth)						
	1 2 3 4 5 6	CP DP EA EB E CV SF E	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth)						
	1 2 3 4 5 6 1 2 3 4	CP DP EA EB E CV SF E E	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency						
	1 2 3 4 5 6 1 2 3 4 1	CP DP EA EB E CV SF E E 4F	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit						
3	1 2 3 4 5 6 1 2 3 4 1 2	CP DP EA EB E CV SF E 4F 4FH E	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit GND (Earth) TS-811						
	1 2 3 4 5 6 1 2 3 4 1 2 3	CP DP EA EB E CV SF E E 4F 4FH E 8C	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit 1 GND (Earth) TS-811 +8V only						
3	1 2 3 4 5 6 1 2 3 4 1 2	CP DP EA EB E CV SF E 4F 4FH E	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit GND (Earth) TS-811						
3	1 2 3 4 5 6 1 2 3 4 1 2 3 4	CP DP EA EB E CV SF E E 4F 4FH E 8C BS	PLL Data PLL A Enable PLL & Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) 4th Frequency for HET unit SND (Earth) 4th Frequency for HET unit SND (Earth)						
3	1 2 3 4 5 6 6 1 2 3 4 4 1 1 2 3 4 4 HET UNI	CP DP EA EB E CV SF E 4F 4FH E 8C BS	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) +8V only Band Select K only 00-00) TS-811 M,T,W,X						
3	1 2 3 4 5 6 1 2 3 4 4 1 2 3 3 4 4 1 ET UNI:	CP DP EA EB E CV SF E E 4F 4FH E 8C BS T (X50-20 (X50-20	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit GND (Earth) + 8V Sand Select K only 00-00) TS-811 M,T,W,X 10-10) TS-811 K GND (Earth)						
3 4	1 2 3 4 5 6 1 2 3 4 4 1 1 2 2 3 4 4 1 ET UNI:	CP DP EA EB E CV SF E 4F 4F 4F E 8C BS 7 (X50-20 (X50-20	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency 4th Frequency for HET unit SND (Earth) 18 and Select K enfy O0-00) TS-811 M,T,W,X GND (Earth) 4th Frequency from PLL unit						
3	1 2 3 4 5 6 1 2 3 4 4 1 ET UNI:	CP DP E8 E8 E CV SF E E 4F 4FH E 8S T (X50-20 (X50-20	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) +8V only Band Select K only J 00-00) TS-811 M,T,W,X 10-10) TS-811 K GND (Earth) 4th Frequency from PLL unit +8V						
3 4	1 2 3 4 5 6 6 1 2 3 4 1 1 2 3 3 4 1 ET UNI:	CP DP EA EB E CV SF E E 4F 4F H EN (X50-20 (X50-20 BS	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) +8V anity Band Select K only GND (Earth)						
3 4	1 2 3 4 5 6 6 1 2 3 4 1 1 2 3 3 4 1 ET UNI:	CP DP EA EB E CV SF E E 4F 4FH E 8C BS 7 (X50-20 (X50-20 E 4FH 8C SS E SS E SS E SS E SS E SS E SS E S	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) +8V only Band Select K only J 00-00) TS-811 M,T,W,X 10-10) TS-811 K GND (Earth) 4th Frequency from PLL unit +8V						
3 4 1	1 2 3 4 5 6 1 2 3 4 4 1 2 2 3 4 4 1 2 2 3 4 4 1 2 2 3 4 4 1 7 ONE	CP DP EA EB E CV SF E E 4F 4FH E 8C BS T (X50-20 (X50-20 E 4FH 8C BS E UX50-20 (X50-20 E SF E SF E SF E SF E SF E SF E SF E S	PLL Data PLL A Enable PLL & Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) 18-811 8V Band Select K only GND (Earth) 4th Frequency TS-811 K GND (Earth) 4th Frequency Frequency GND (Earth) TS-811 FREQUENCY BAND Select K only TS-811 FREQUENCY FREQUE						
3 4	1 2 3 4 5 6 6 1 2 3 4 4 1 1 2 3 4 4 TONE	CP DP EA EB E CV SF E E 4F 4F 4F E 8C 8C (X50-20 (X50-20 BS UNIT (X:	PLL Data PLL A Enable PLL B Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) 4th Frequency for HET unit +8V only Band Select K only J 00-00) TS-811 M,T,W,X 10-10) TS-811 K GND (Earth) 4th Frequency from PLL unit +8V Band Select K only Tone on: H (5V)						
3 4 1	1 2 3 4 5 6 1 2 3 4 4 1 2 2 3 4 4 1 2 2 3 4 4 1 2 2 3 4 4 1 7 ONE	CP DP EA EB E CV SF E E 4F 4FH E 8C BS T (X50-20 (X50-20 E 4FH 8C BS E UX50-20 (X50-20 E SF E SF E SF E SF E SF E SF E SF E S	PLL Data PLL A Enable PLL & Enable GND (Earth) Control Voltage Standard Frequency GND (Earth) GND (Earth) 4th Frequency for HET unit GND (Earth) 18-811 8V Band Select K only GND (Earth) 4th Frequency TS-811 K GND (Earth) 4th Frequency Frequency GND (Earth) TS-811 FREQUENCY BAND Select K only TS-811 FREQUENCY FREQUE						

Connec- tor No.	Termi- nal No.	Terminal name	Terminal Function	
	CON	TROL UN	IT (X53-1410-XX)	
	1	E	GND (Earth)	
①	2	E2	RIT ENCODER PULSE 2	- 1
_	3	E1	RIT ENCODER PULSE 1	I
	1	Ε	GND (Earth)	
	2	EN1	MAIN ENCODER PULSE 1	- 1
_	3	EN2	MAIN ENCODER PULSE 2	- 1
2	4	EN3	MAIN ENCODER PULSE 3	- 1
	5	5C	Common 5V	0
	6	PS	PLANGER SENSOR	1
	7	PN	PLANGER SWING PULSE	0
	1	FS	Frequency STEP LED	0
	2	FL	Frequency LOCK LED	0
3	3	DC	DCL LED	0
9	4	CL	CHL LED	0
	5	CS	CSQ LED	0
	6	CA	CALL LED	0
	1	MM	MIC MUTE	0
	2	MM	· MIC MUTE	0
	3	SQS	, Squelch Select	0
4	4	8LK	Blanking Pulse	0
•	. 5	AL	Alert Mute	0
	6	: DW	MIC DOWN	i
	7	UP .	MIC UP	ł
	8	SC	SCAN Control 5.4V (Busy :	H) I
	1	, €	. GND (Earth)	
	2	WR	Write strobe	0
	3	RD	Read strobe	Q
(3)	4	CS	Chip Select	0
	5	C/D	Common/Data	0
	6	RDY	Receiver Ready	- 1
	7	\$B	Switched B (13.8V)	- 1
	1 1	D7	Data Bus 7	1/0
	2	D6	Data Bus 6	1/0
	3	D5	Data Bus 5	1/0
_	4	D4	Data Bus 4	1/0
6	5	D3	Data Bus 3	1/0
	6	D2	Data Bus 2	1/0
	7	D1	Data Bus 1	1/0
	1 8	D0	Data Bus 0	1/0
	. 9	RES	Reset	0
	1	T1	Tone data 1	0
	2	T2	Tone data 2	0
	3	T3	Tone data 3 K,M,X	0
	4	T4	Tone data 4 only	C
(7)	5	T5	Tone data 5	C
	6	T6	Tone data 6	0
	7	5C	:-	0
	. 8	TH	Tone on . H (5V)	C
	9	TI	Tone input	1
	. 10	E	GND (Earth)	
	1	PSQ		C
	2	PS1		C
	3	PS2		0
8	4	PS3	VS-1	0
_	5	PS4		0
	6	SR		(
	7	BY		١
	8	5C1	12	Ç
		1	1	
l	1			
			1	
			4	

TS-711/811

TERMINAL FUNCTION

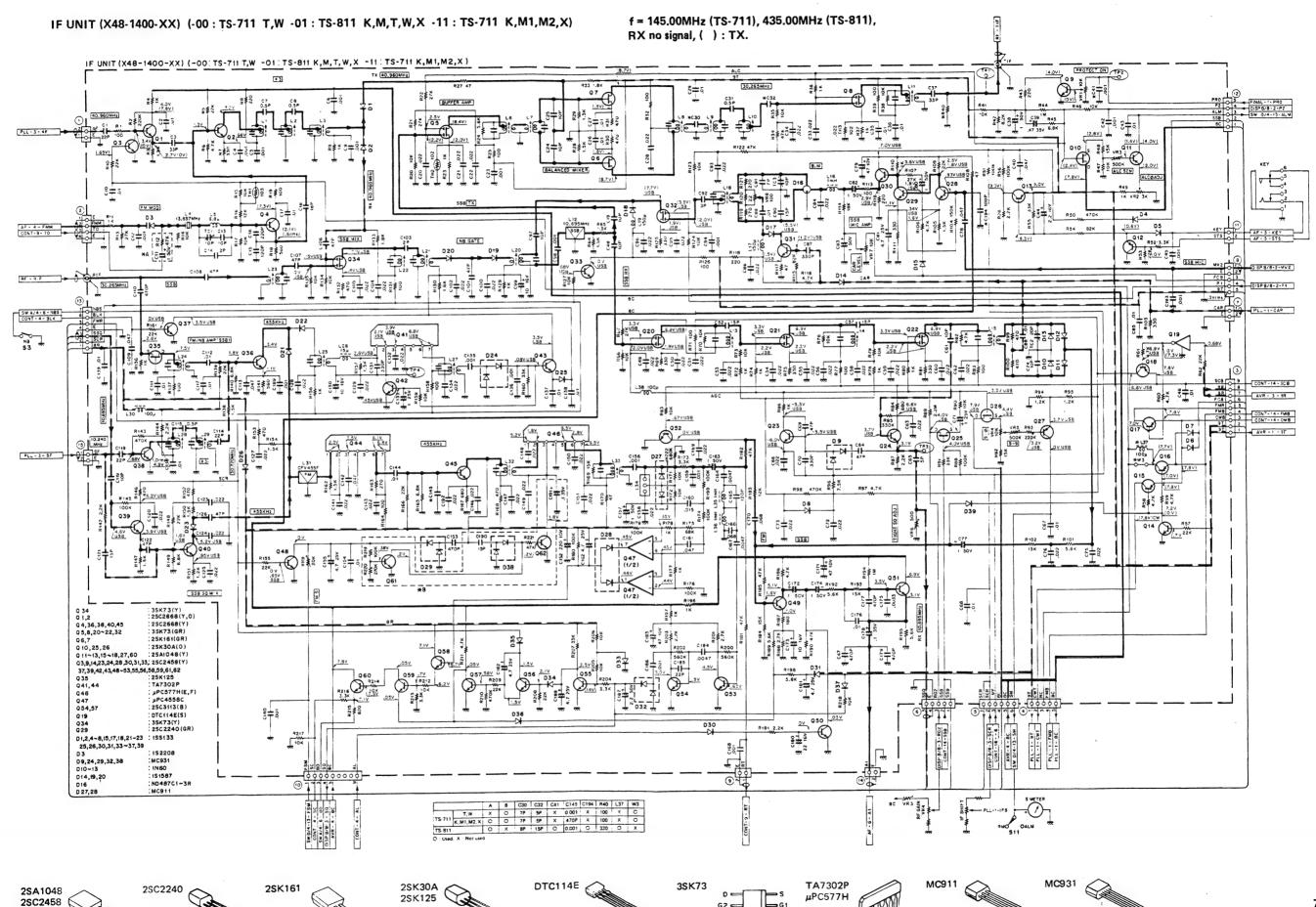
Connec- tor No.	Termi- nai No.	Terminal name	Terminal Function	
	1 ,	то	Tone out	0
1	2	E AN1	GND (Earth) Analog input	0
	4	E	GND (Earth)	۰
9	5	RT	Modern Receive Input	- 1
	6	Ε	GND (Earth)	
	7	BZ	Beep out	0
	8	8C2	GND (Earth)	0
10	2	E E	VS-1	
	3	vo		- 1
	1	58	B for 5C	- 1
10	2	ST	GND (Earth)	0
1 0	1 4	SB	Standby out Switched B	i
	1	DD	PLL Data	0
1 .	2	E	GND (Earth)	
12	. 3	CP	PLL Clock	0
1	5	EA EB	PLL A Enable PLL B Enable	0
	1 1	11C	Common 11V	0
1	2	-6V	-6V	ī
l _	, 3	DD	Display Data	0
13	4	CD	Display Clock	0
1	5	ED 5C	Display Enable Common 5V	0
1	7	E	GND (Earth)	_
	1	CWB	CW + B (8V)	0
	2	CWB	CW + B (8V)	0
İ	3	CWB	CW + B (BV)	0
	5	FMB	FM + B (8V) FM < B (8V)	0
10	6	LSB	LSB + B (8V)	ō
1	7	SCB	SSB/CW + B (8V)	0
1	8	SSB	SSB + B (8V)	0
	10	SSB	SSB + B (8V)	0
	11	8C	Common 8V*	ō
	1	AU	AUTO LED	0
-	2	LS	LSB LED	0
13	3	CW	CW LED	0
ĺ	5	US	USB LED FM LED	0
	1 1	-6	-6V	0
16	2	-6	-6V	0
1 (19)	3	SS	Standby Switch	I.
	4	SS	Standby Switch	
	1 2	A1 A2	Port A1	0
1	3	A3	Port A3 KEY SCAN	ō
	4	Α4	Port A4 output	0
	5	A5	Port A5	0
	6	A6	Port A6 J	0
10	7 8	B1	Port 80 Port B1	1
1	9	B2	Port B2 KEY SCAN	í
	10	83	Port B3 input	1
1	1 11	B4	Port 84	t
	12	85	Port B5 J Port B6 VOICE Switch	1
	13	B6	FOR BO VOICE SWITCH	,
		1		

Connec-		Terminal	Terminal Function					
tor No.	nai No.	name	T (X54-1820-11)					
		APO	Audio Power out					
	1 2	E	GND (Earth)					
1	3	AP	GND (Earth) Audio Power					
	4	E	GND (Earth)					
	1	PC	Power Control					
	2	E	GND (Earth)					
	3	MV2	MIC Volume 2					
a	4	E	GND (Earth)					
2	5	MV1	MIC Volume 1					
	6	P1	Power Control 1					
	, 7	E	GND (Earth)					
	8	P2	Power Control 2					
	1	SQS	Squelch Select					
	2	SCR	SSB/CW RX + B					
	3	IFS	IF Shift Voltage					
3	5	SQ BC	Squeich Volume + 8V					
	6	RG2	RF Gain Volume 2					
	7	E	GND (Earth)					
	i 1	APO	Audio Power out					
_	2	E	GND (Earth)					
4	3	AP	Audio Power					
	4	Ε	GND (Earth)					
	1	E	GND (Earth)					
	2	5C	Common 5V					
	3	ED	Display Enable					
(5)	4	CD	Display Clock					
	5	DD	Display Data					
	6	6	-6V					
	7	11C	Common 11V					
	1	E	GND (Earth)					
	2	8M	MIC BV					
	3	UP	MIC UP					
6	4	DW	MIC DOWN					
	5	SS	Standby Switch MIC AF input					
	7	NIC E	GND (Earth)					
	1	E	GND (Earth)					
7	2	SP	Speaker					
-	1	DE	Delay					
	2	E	GND (Earth)					
	3	APO	Audio Power out					
8	4	SS	Standby Switch					
	5	SS	Standby Switch					
	6	KEY	KEY					
	7	STS	Sidetone Switch					
	8	CWB	CW + B (8V)					
	ENC	ODER AS	S'Y (W02-0364-00)					
	1	E	GND (Earth)					
1	2	EN1	MAIN ENCODER PULSE 1					
1	3	EN2	MAIN ENCODER PULSE 2					
1	4	EN3	MAIN ENCODER PULSE 3					
"	5	5C	Common 5V					
	6	PS	PLANGER SENSOR					
	7	PN	PLANGER SWING PULSE					
		1						
ĺ		1	***************************************					
1	1							
	1							

C156 C149 X48-1400-XX R151 C125 021 L33 L32 040 C124 R150 | 153 | 0 29 | 1 29 R164 C143 R141 C162 R170 036 +055 C126 023 023 R154 C116 R149 C123 R164 C127 R140 R148 O C164 C165 L28 *C1 *B220 *R221 *R213 *R21 R153 R139 R174 R175 R178 00 C115 135 R157 C129 037 C109 C109 D25 L29 C139 L24 R63 L183 / B R185 / B R186 / B SS m RS C113 SCR 5 L27 C105 R136 6 22 6 132 18 R129 099 C108 R160 C C102 L21 L22 L23 R187 C109 D 20 <u>:</u> R133 L20 191 R40 C47 09 VR3 TS-711 C103 VR1 C98 -₩ 29 C42 039 63 R125 5 PRO © W21 W24 W25 W26 043 ONOS R49 K,M1,M2,X) R41 R12 L12 W 27 010 PGS ALM SSB 1 BC 12 C86 Q32 G1 R126 G2 R124 81 C40 B29 R47 1881 1851 \QQ_______ R123 ×lolo G271 C31 060 18 R35 C30 C92 R22 C20 C32 02 G2 D C89 L18 C24 C25 E R108 D16 R21 R21 L6 L7 L8 L9 L10 R69 C50 R64 W3, 71C3 S Gt R25 R26 R26 S G1 R65 C48 G2 R66 R67 C19_{R23} 00 R27 R28 WE C29 18 ONE 0.54 D 2 C45 710 TC1 049 L14 R72 S 073 U 026 R71 C62 28 C63 8 N (12 - 2) TH1 R15 02 C69 R86 C72 CWT W5 R97 C 65 689 (m)__. 8C 5 SSB R910 φ. SCB ш 293 (2) (0) n 16

F UNIT (X48-1400-XX) Component side view (-00 : TS-711 T,W -01 : TS-811 K,M,T,W,X

CIRCUIT DIAGRAM/PC BOARD VIEW TS-711/811

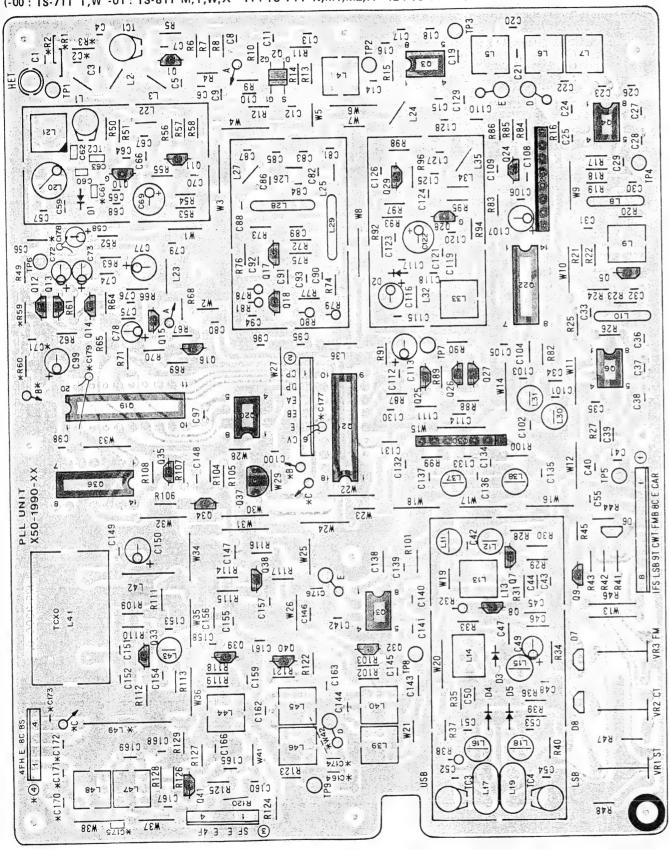


2SC2668

2SC3113

TS-711/811 CIRCUIT DIAGRAM/PC BOARD VIEW PLL UNIT (X50-1990-XX) (-00: TS-711 T,W -01: TS-811 M,T,W,X -11: TS-711 K,M1,M2,X -12: TS-811 K) f = 145,00MHz (TS-711), 435.00MHz (TS-811), RX no signal, (): TX. PLL UNIT(X50-1990-XX)(-00:TS-711 T,W -01:TS-811 M,T,W,X -11:TS-711 K,M1,M2,X -12:TS-811 K) 02 .001 1.5K RI 56 64~68MHz 10.695MHz 1/512 5.0V Q37 5,0V 10,240MHz X2 40.96MHz 10.240MHz 3 - N n 4 (1) 3 4 2 (3) 6 Q1,5,11,17,18,29,40 :2SC2668(Y) Q2 :3SK73(Y) Q3,4,6,31 :SN16913P 020 021 022,36 023 : µPB555C : MCI45155P ¥ K : SN74LS9ON : M54459L Q2 Q3,4,6,31 Q7,8,41 Q9,16,33~35,38,39 Q10,28, :2SC2787(L) :2SC2458(Y) :2SK!92A(GR)*N Q24,32 :2SC2668(Y,0) Q30 :TA7302P Q37 :NJM78L05A QI2~I4,25~27 QI5 :25C2459(BL) :25A1048(Y) :MC145156P 3SK73 2SK192A 2SA1048 M54459L NJM78L05A TA7302P MC921

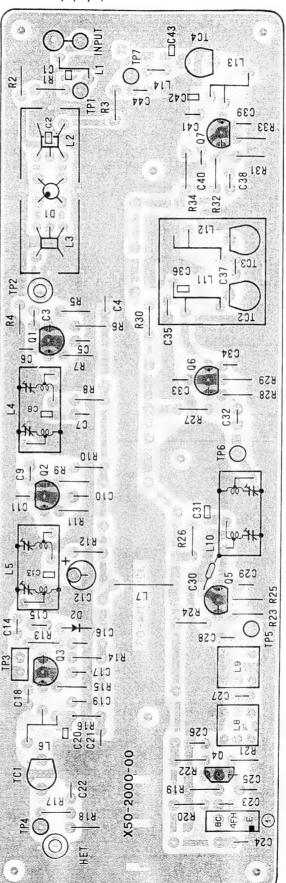
2SC2458 2SC2459 2SC2668 2SC2787



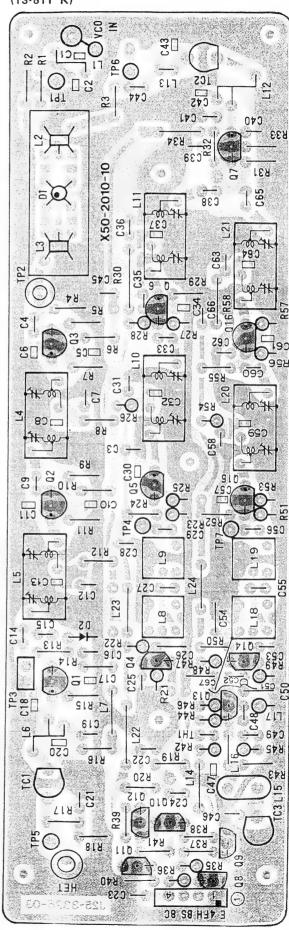
	T	1 49	B1	B2	R3	R59,60	C2	C61	C71	C164	C170	C171-175	C177	C178,179	W42	4	В	С
	=	L49	0	112 V	110	0	0	X	0	0	0	X	0	Х	X	X	0	X
TS-711	1,W	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	0	-	10	0	0	0	0	0	0	×	0	X	X	×	0	X
10 / / /	K,M1,M2,X	X		^	-	- V	Y	X	X	X	X	0	X	0	0	0	×	0
TC-811	M,T,W,X		X	0	1-0-	-	Y	Y	X	X	X	0	X	0	0	0	X	0
113-011	K	0	X	0	_ ^	_ ^		1_^	1 ~		L	1			-			

O: Used X: Not used

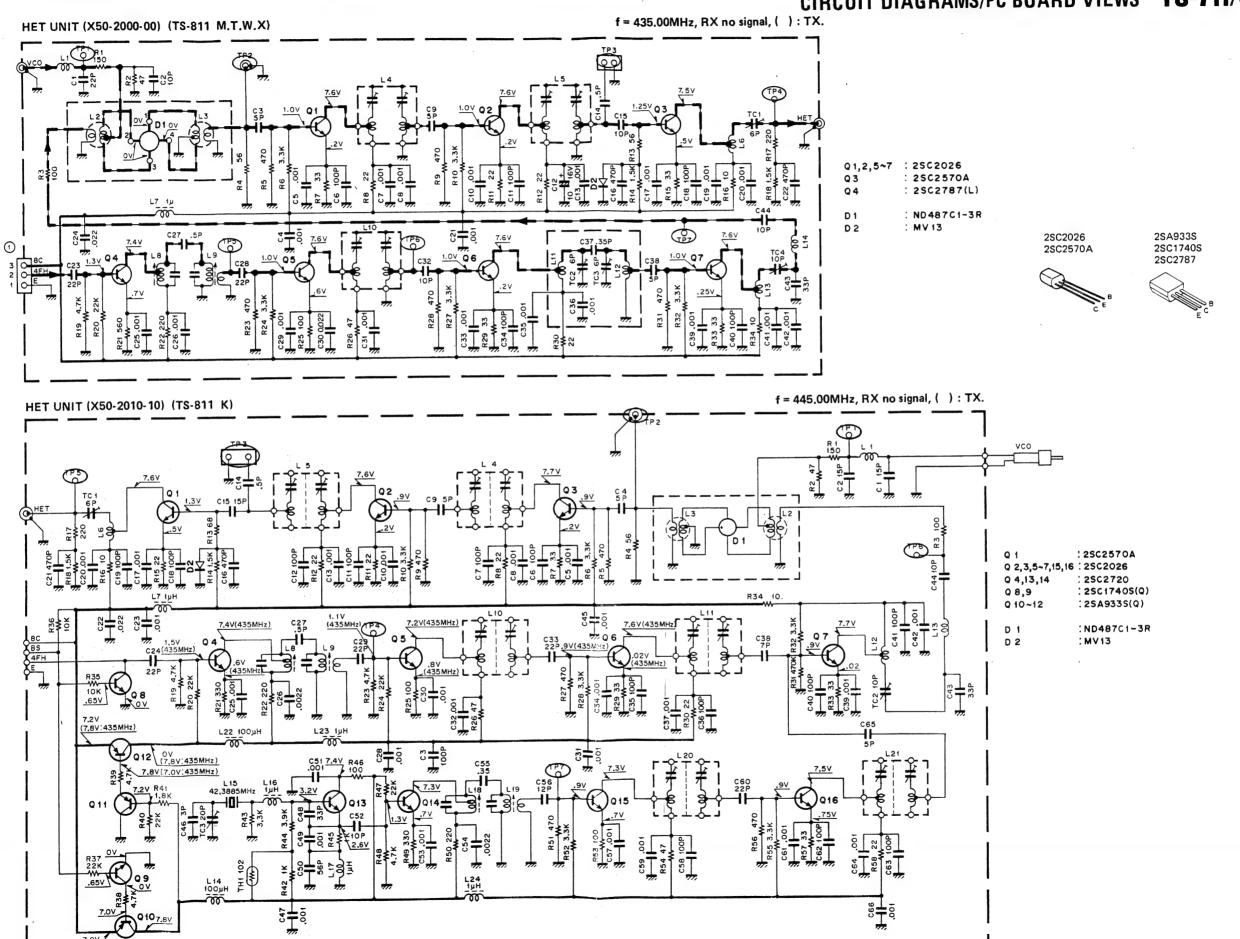
HET UNIT (X50-2000-00) Component side view (TS-811 M,T,W,X)



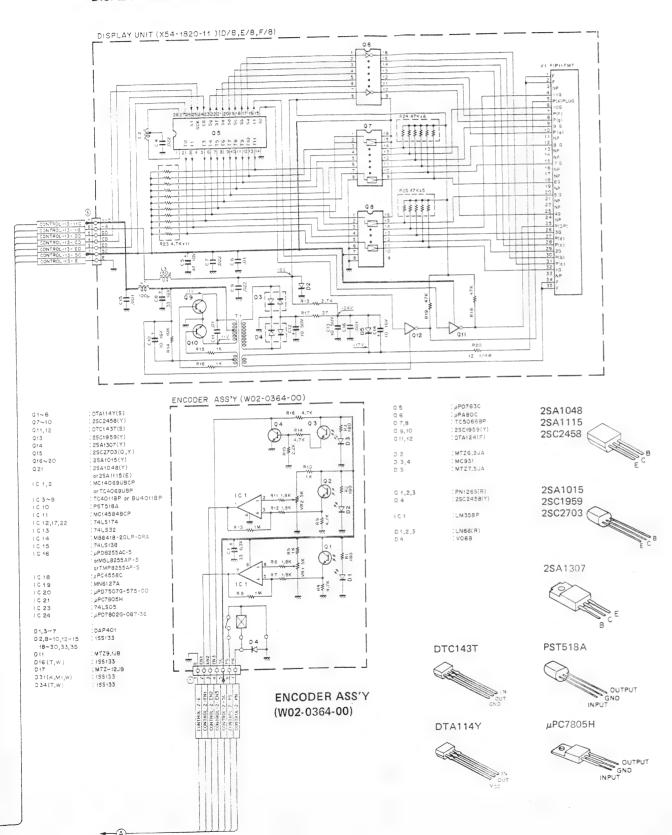
HET UNIT (X50-2010-10) Component side view (TS-811 K)



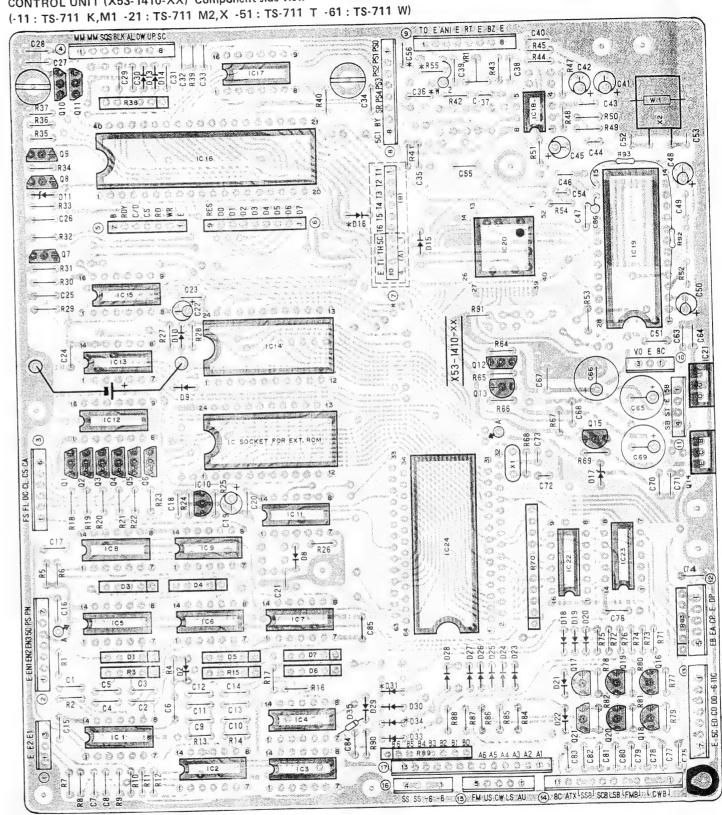




DISPLAY UNIT (X54-1820-11)



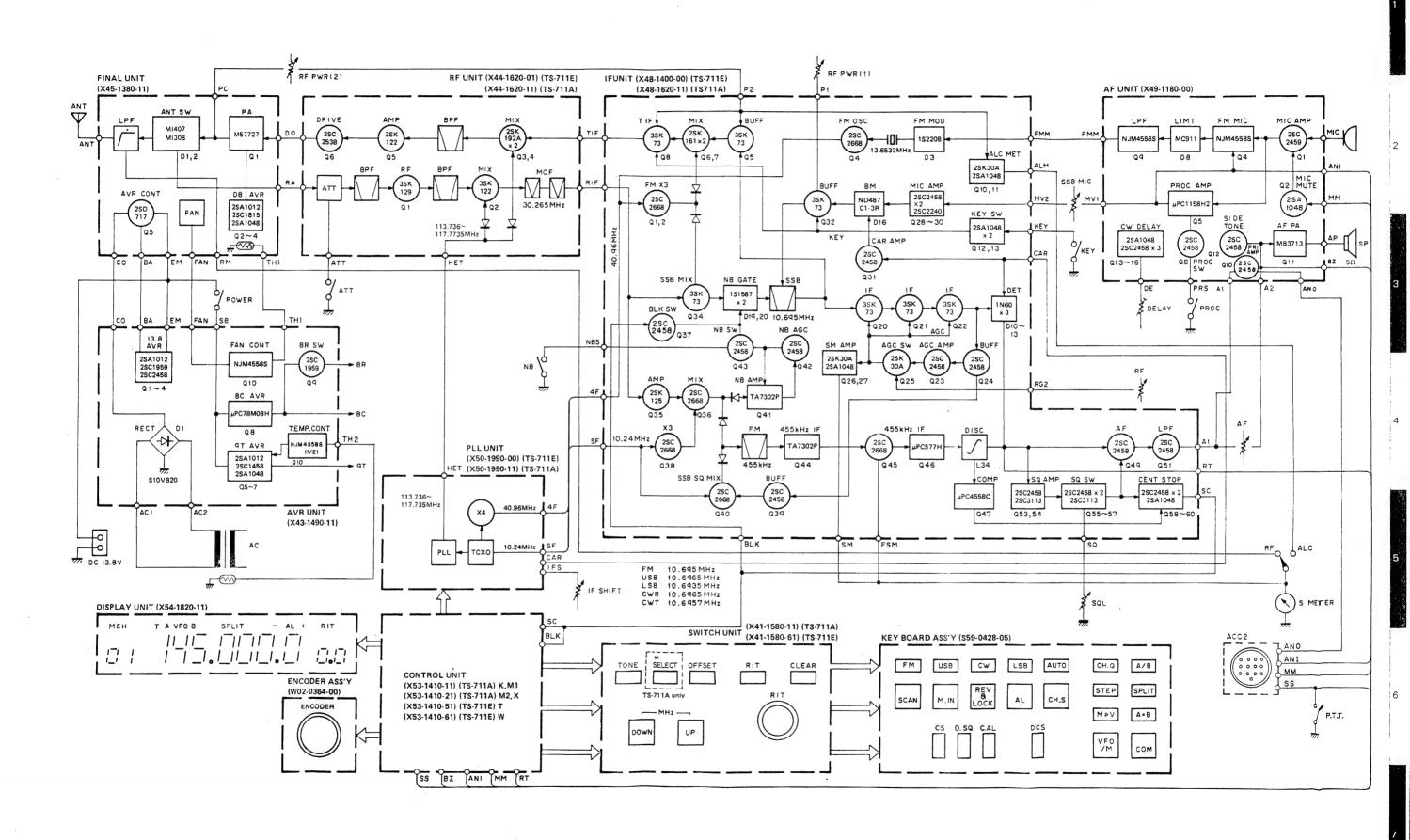
CONTROL UNIT (X53-1410-XX) Component side view

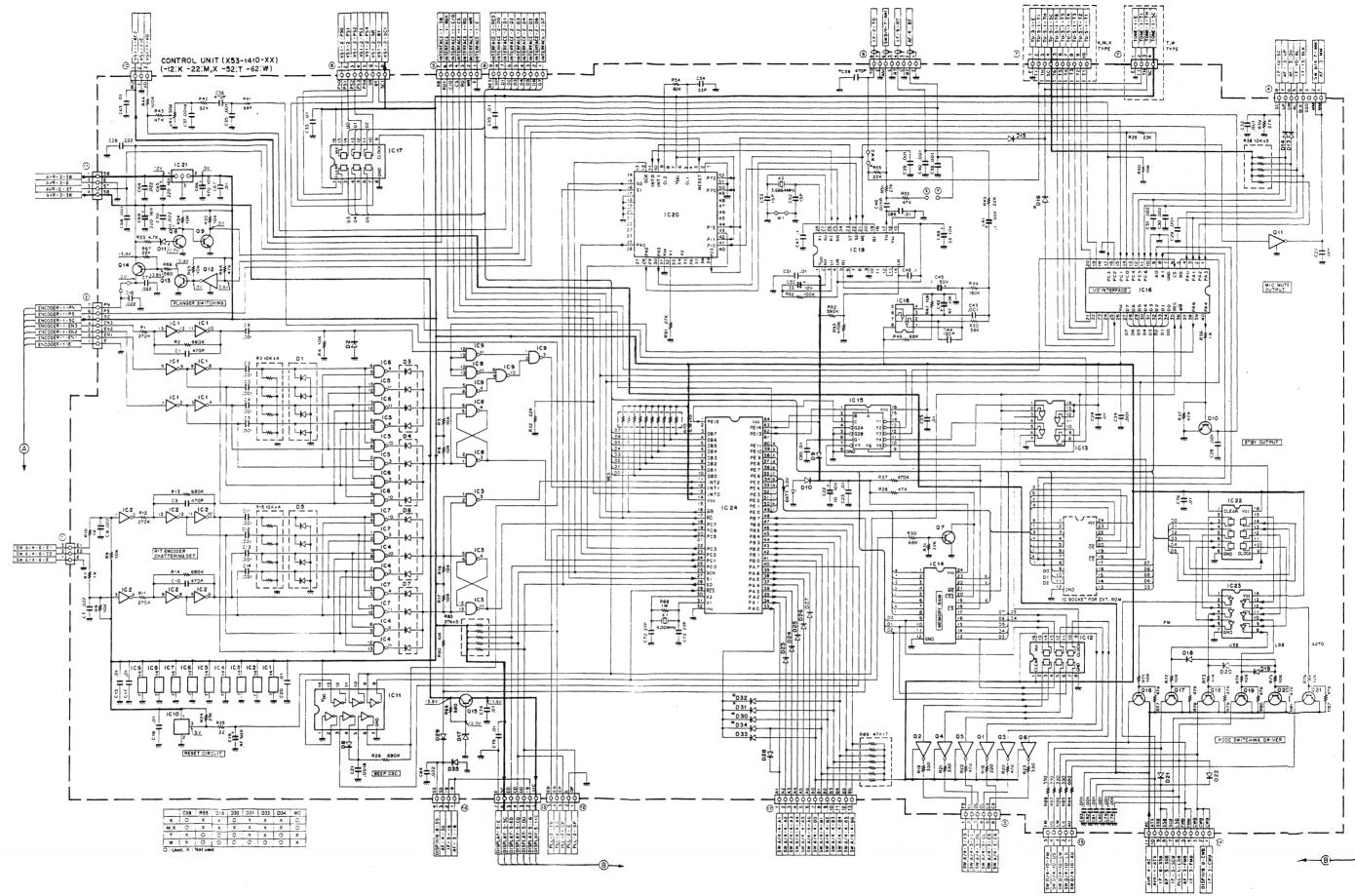


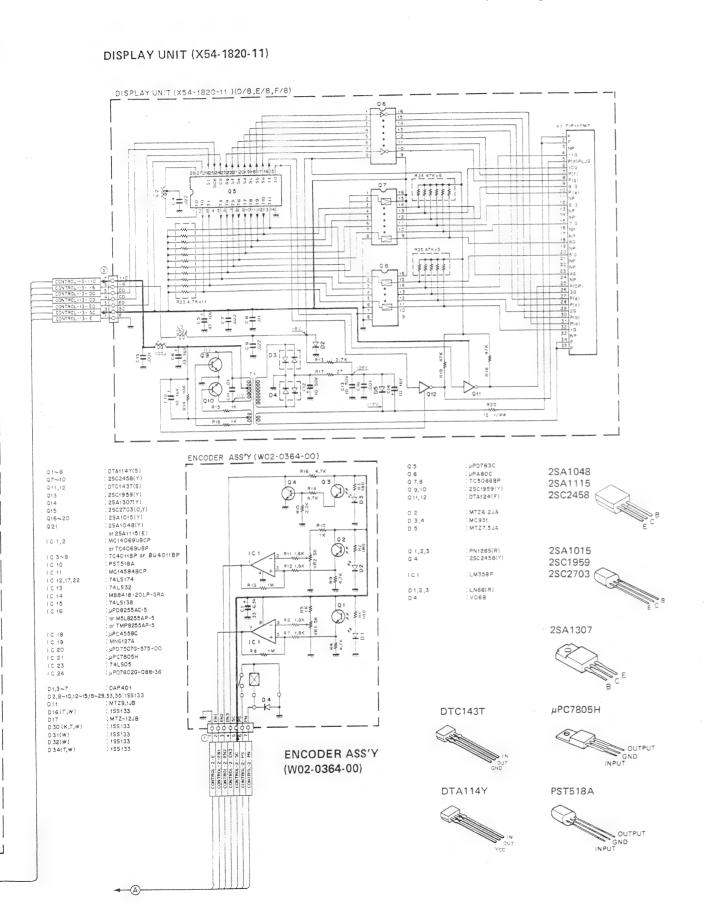
	C56	R55	D16	D31	D34	W2	7 - (A)	7 -(B)
K.M1	0	X	X	0	X	0	X	0
M2.X	0	X	X	X	X	0	X	0
T	X	0	0	X	0	X	0	X
W	X	0	0	0	0	X	0	X

O: Used X: Not used

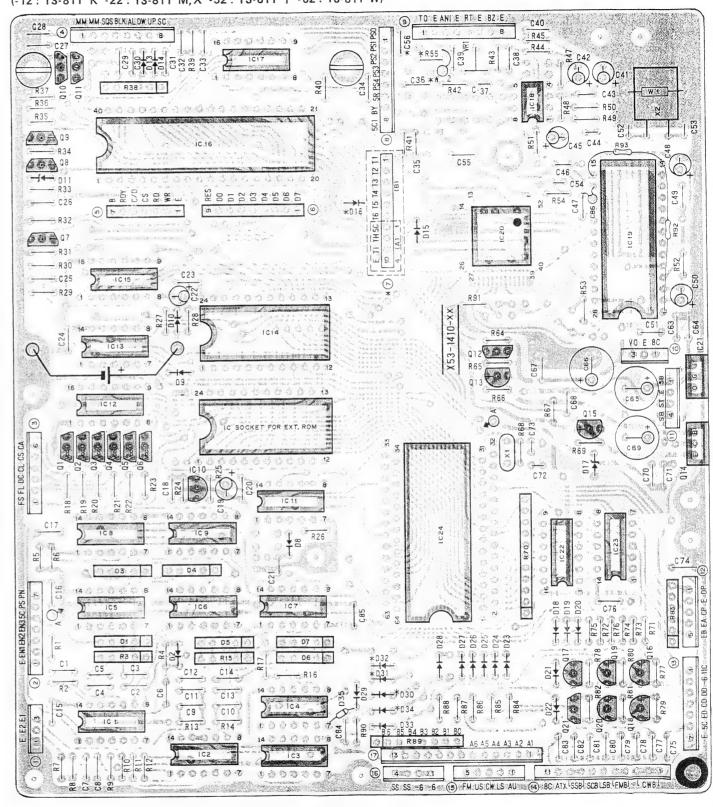
PC BOARD VIEW/ BLOCK DIAGRAM TS-711A/E







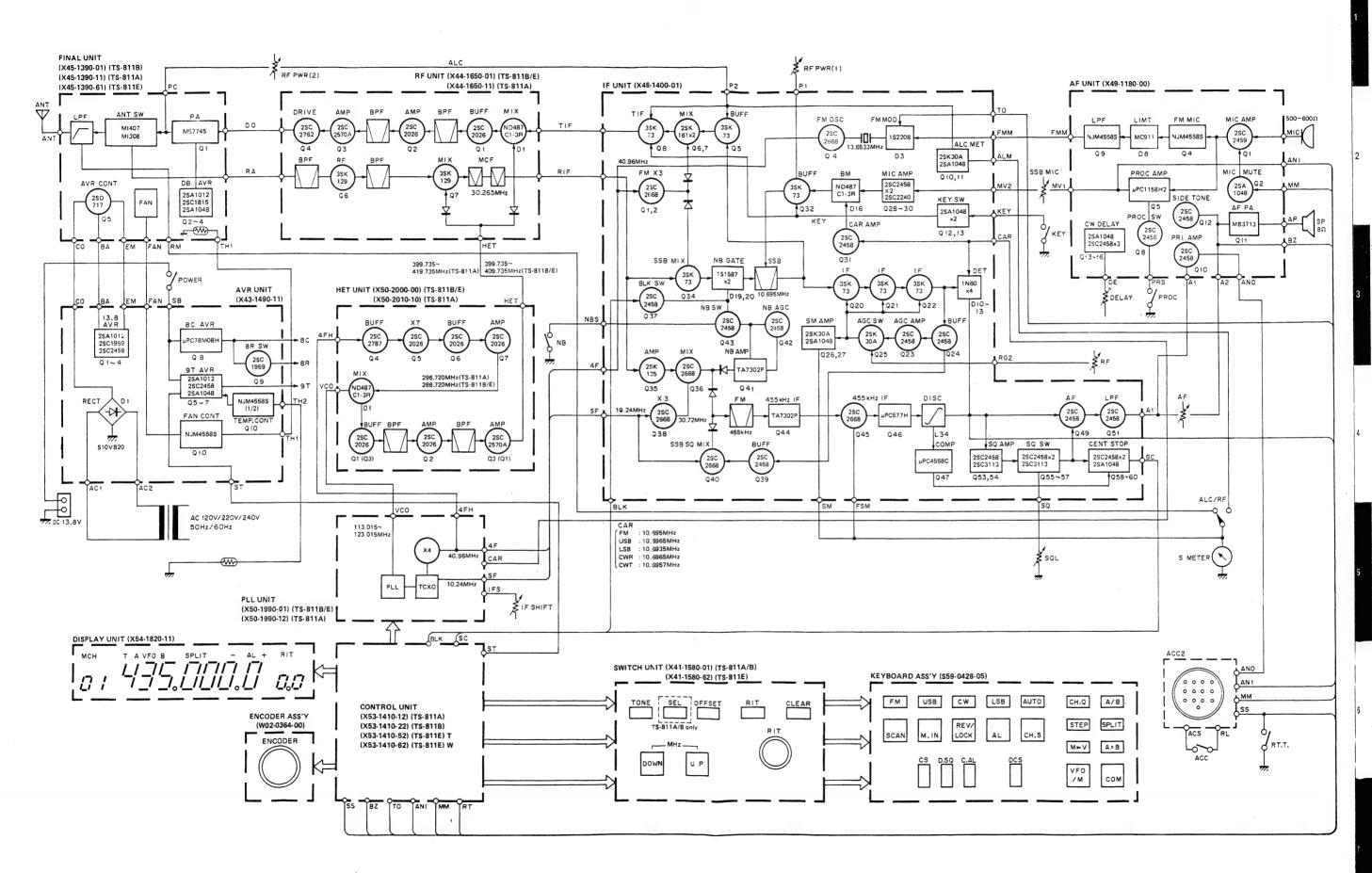
CONTROL UNIT (X53-1410-XX) Component side view (-12: TS-811 K -22: TS-811 M, X -52: TS-811 T -62: TS-811 W)

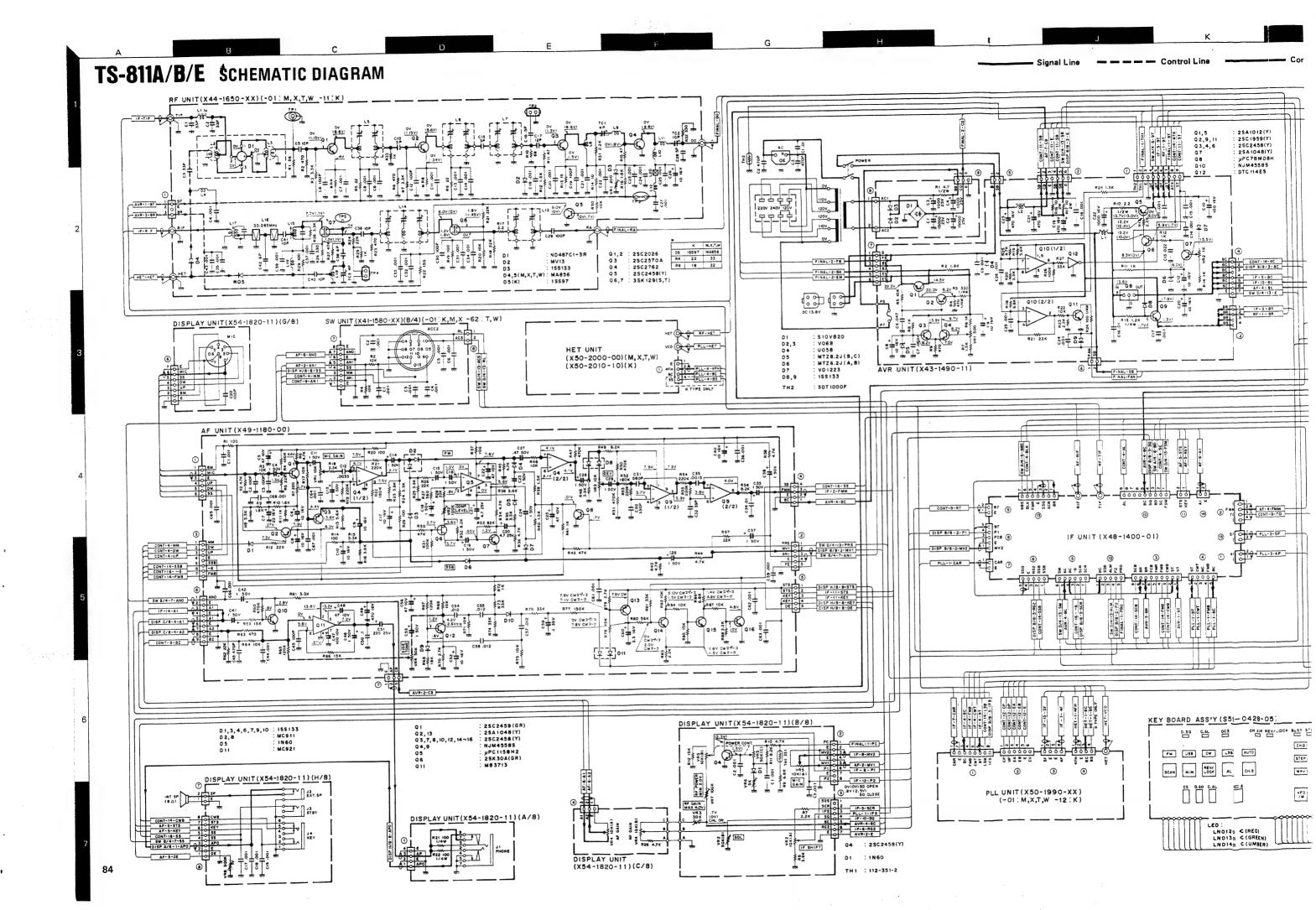


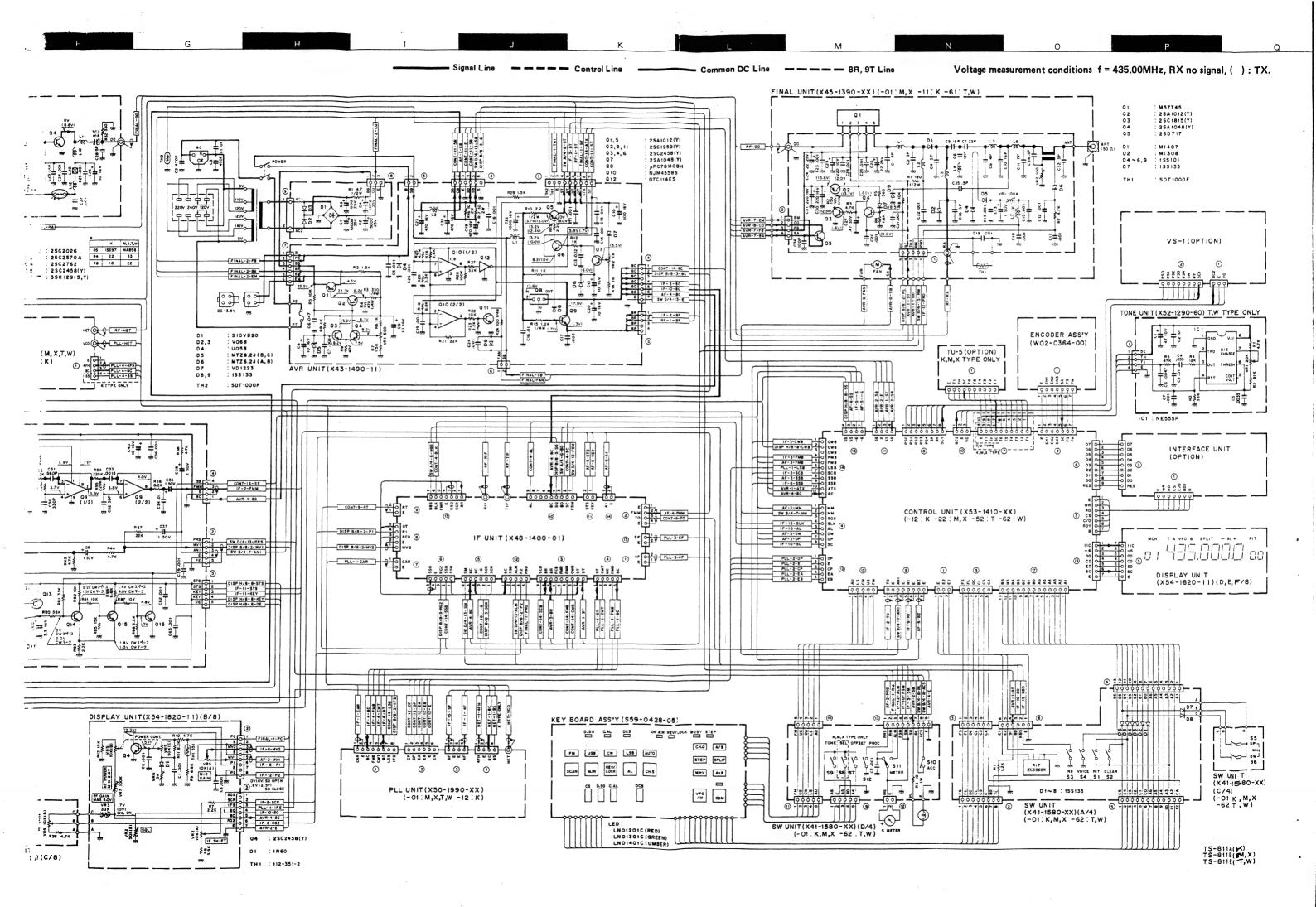
	C56	R55	D16	D30	D31	D32	D34	W2	7-(A)	7) -(B)
K	0	X	X	0	X	X	Χ	0	X	0
M,X	0	X	X	X	X	X	X	0	X	0
Т	X	0	0	0	X	X	0	X	0 ;	Χ
W	X	0	0	0	0	0	0	X	0	X

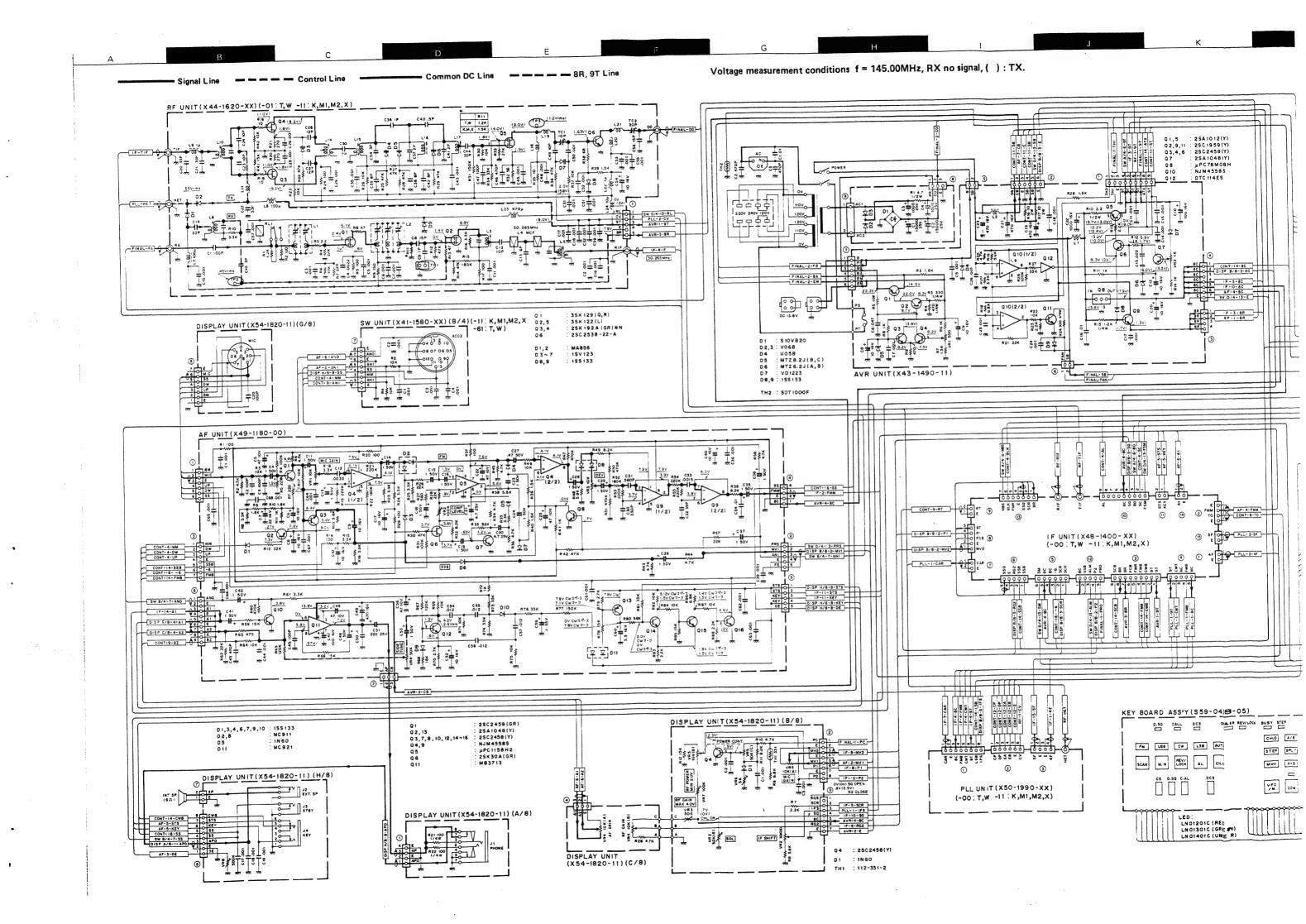
O: Used X: Not used

PC BOARD VIEW/BLOCK DIAGRAM TS-811A/B/E









CD-10 (CALL SIGN DISPLAY)

PARTS LIST

CD-10 GENERAL

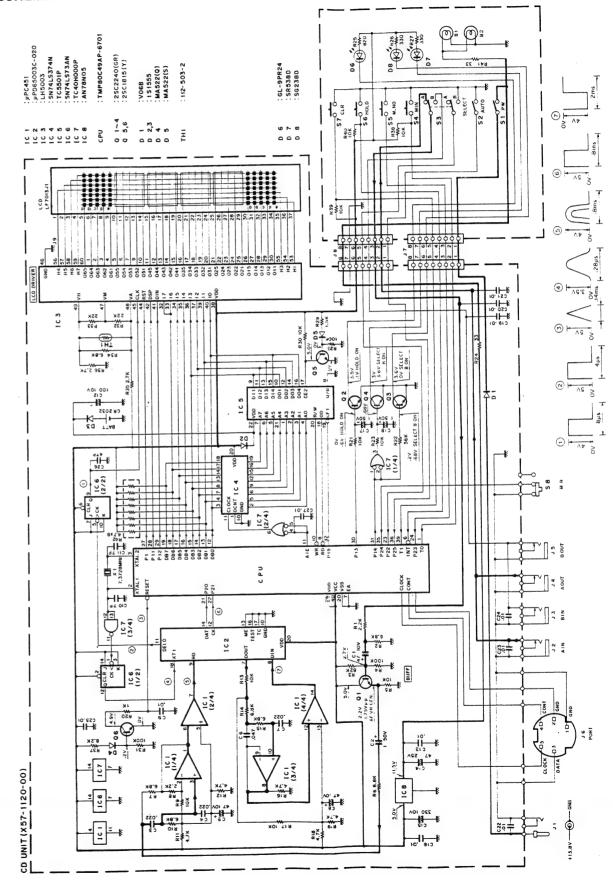
			DISTINCTION	& QUANTITY &	
PART . NO	NOTE	NAME & DESCRIPTION	011-021-051		REFERENCE.NO
02-0708-02	i N	CASE	1 1		
02-0709-02		CASE	1		1
13-0662-03	N.	BLACKET	1 1 1		
A20-2539-02	N	PANEL	1 1 1		
A20-2339-02					1
240 0471-04	i N	FRONT GLASS	1 1 1		
B10-0671-04		LCD LIGHT GUIDING PLATE	. 1 1 1		
B11-0415-14	N	LCD LIGHT GUIDING SHEET	1 1 1		
B11-0425-04		MODEL NAME PLATE	1 1 1 1		
840-3560-04	N	CABLE LABEL	1 1 1		
B42-2393-04					
B43-1042-04	N	BADGE	1 1 1 1		The second state of the se
843-1043-04	N	BADGE	1 1		
B46-0411-00		USER & WARRANTY	1 1		
850-8013-00	N	INSTRUCTION MANUAL			
B50-8014-00	N	INSTRUCTION MANUAL	1	+	
E07-0552-05	N	SP DIN PLUG	1: 1: 1		
E29-0460-05	N	EXCHANGE PLUG	1 1 1		
E30-1797-05	N	DC CABLE ASS'Y	1 1 1		
E30-1798-05	N	CABEL WITH PLUG	1 1 1		
	N	CABLE WITH PLUG	1 1 1		
E30-1799-05		4.042			
		COIL SPRING X9	7 7 7	1 - 1 1 1 1	
G01-0821-04	1	RUBBER RING	2 2 2		
G11-0614-04	. N	INUBBER NING			
			1 1 1	: :	į.
H01-4626-03	N	CARTON	: 1 1 1 1		
H01-4627-03	i N	CARTON			
H12-1375-14	N=	BUFFER(B)			
H12-1372-13	N=	BUFFER			
H25-0112-04	1 .	PROTECTIVE BAG 180X250	1 1 1		
H25-0103-04	-	BAG 125X250	1 1 1		
H25-0029-04		BAG (ACS) 60X110			
H25-0049-03	- 1	PROTECTIVE BAG 60X200	1 1 1		
H23-0047-03		1			
102-0435-05	N	RUBBER FOOT ACS	. 1 1 1 1		* 1.3 (2) (2) (2) (2) (2) (2) (2) (2) (2) (2)
	l N	FRONT FOOT ACS	1 1 1		
J02-0436-04		SW GUIDE A (TACT KNOB)	1 4 4 4		
J29-0407-04	- 1	SW GUID X3	3 3 3		
J29-0409-04	1	ROUND BOSS MEXA	2 2 2		
J32-0785-04	_	אטטאט פנטט אוראט			T1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
1 10		PUSH KNOB (E)	3 3 3		
K27-0440-04			1 1 1		The second secon
K27-0441-04		PUSH KNOB (F)	2 2 2		
K27-0445-05		SQUARE KNOB (A)	1 1 1		
K27-0446-05		SQUARE KNOB (B)	1 4 4		
					A REPORT OF THE PROPERTY OF THE PROPERTY OF THE
N08-0513-04	N	DRESSED SCREW	2 2		
N09-0633-05		SCREW (OTHERS)	2 2 2		
N14-0115-05	1 .	NUT	2 2 2		
N15-1040-46	_	FLAT WASHER	2 2 2		
N16-0040-46	- 1	SPRING WASHER	2: 2: 2:		1
		PAN HD SCREW	2 2 2		
N30-2006-41		PAN HD SCREW	2 2 2		
N30-4041-46	. [BIND SCREW	1 1 1		그 [그무 그 그 그리고 그리고 얼마나왔었다.
N35-2004-41			3 3 3		TO THE RESERVE AND THE PROPERTY AND
N89-2005-46		BIND TAPPING SCREW			
x57-1120-00	N	CD UNIT	1 1 1		
1731-1150-00	1 "	1	1 : : : 1		

CD UNIT (X57-1120-00)

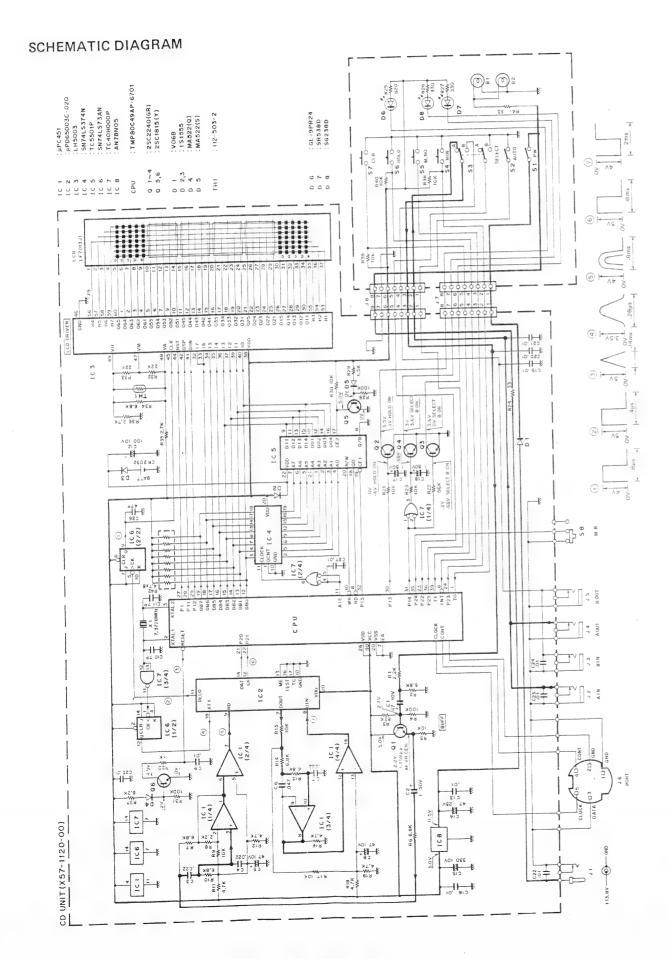
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l N	LAND		2			Ĺ		1				B , 1, 2
-	CART		1		T		,	1		1 1	1	
	CEDAMIC	22P 50V	1					1 1	1	1		C > 11
	CERANIC		11		ł			1	ł	1. 10		C , 26
	CERAMIC			_	1							C , 1, 5, 8
1				1		1	1	1 :	1	1 1	1	C , 12
1				- 1	1	ł	1				i	C , 15
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	ELECTRO			1	1 .		-		1	1	1	C , 2, 17, 18
1	ELECTRO			- 1	1 : 1	į.						C , 9, 13, 16
i	CERAMIC							-				C , 27
	CERAMIC	1000P 50V	1	İ	1				- 1			
1		0.022 50V	: 3	1	1	í		i		1 1	į	
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-			. 7		1	1	1				1	C , 19, 20, 21, 22, 23, 24, 2
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	DC JACK				+	-	-	. 1				1 , 6
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	TR											
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CD-10 (CALL SIGN DISPLAY)

SCHEMATIC DIAGRAM

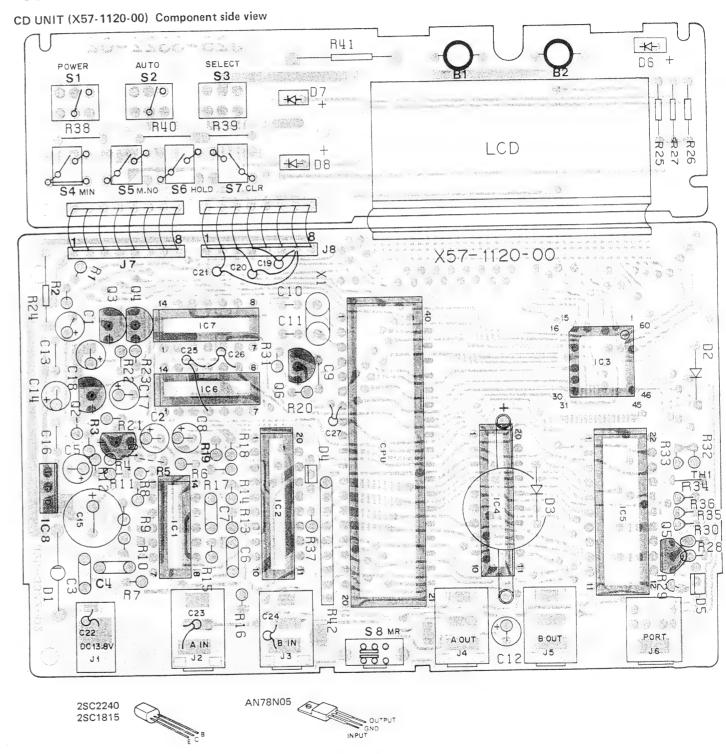


CD-10 (CALL SIGN DISPLAY)



CD-10 (CALL SIGN DISPLAY)

PC BOARD VIEW



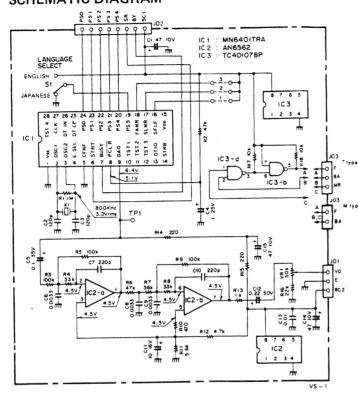
TS-711/811

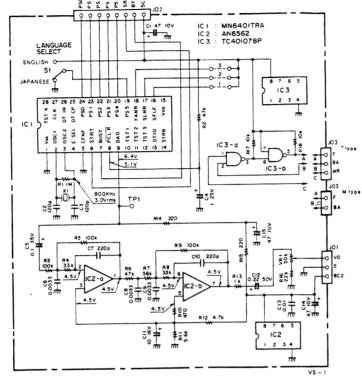
VS-1 (VOICE SYNTHESIZER)

PARTS LIST

PANISLISI			
Part No.	Re- marks	Description	Ref. No.
B50-4035-00	N	Instruction manual	
CC45SL1H121J		C 120P x 2	C2,3
CE04W1A470M CE04W1C100M CE04W1HR22M		E 47 10V E 10 16V E 0.22 50V	C1,14,15 C11 C12
CK45B1H221K		C 220P × 2	C7,10
CQ92M1H332K		ML 0.0033 x 3	C6,8,9
CS15E1E010M CS15E1V0R1M		T 1 25V T 0.1 35V	C4 C5
C91-0131-05		C 0.01 (SP)	C13
E40-0273-05 E40-0373-05 E40-0373-05 E40-0873-05	Δ Δ Δ	Mini connector 2P M Mini connector 3P M Mini connector x 2 3P T Mini connector 8P	
H01-4481-03 H01-4501-03 H25-0029-04	N A N A	Packing carton (inside) M Packing carton (inside) T Protective bag x 2	i
L78-0006-05	N	Ceramic OSC	X1
N89-3006-46		Tapping screw x 4	
R12-4408-05		Trim. pot. 50kΩ	VR1
S31-1411-05	N	Slide switch	S1
AN6562 MN6401TRA TC40107BP	2 2 2	IC IC IC	IC2 IC1 IC3

SCHEMATIC DIAGRAM





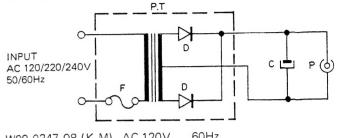
AC-10 (CD-10 FOR CHARGER)/TU-5 (TONE UNIT)

AC-10 SPECIFICATIONS

Input voltage
Frequency response 50/60Hz
Output voltage DC 13.8V
Output current

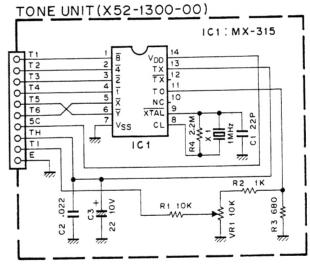
AC-10 SCHEMATIC DIAGRAM

(Y61-2680-XX) (-21: K,M -51: T -61: W -71: X)



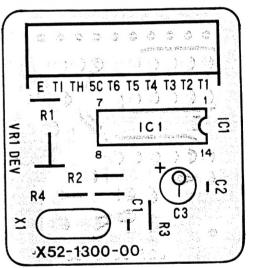
W09-0347-08 (K,M) AC 120V W09-0348-08 (T) AC 240V AC 220V 50/60Hz W09-0349-08 (W) AC 240V 50/60Hz W09-0350-08 (X)

TU-5 SCHEMATIC DIAGRAM

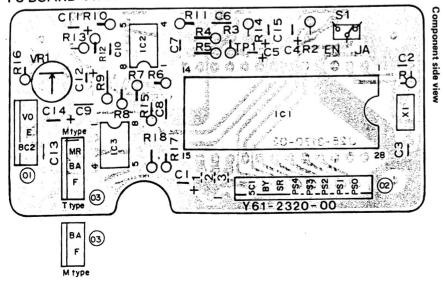


TU-5 PC BOARD VIEW

TONE UNIT (X52-1300-00) Component side view

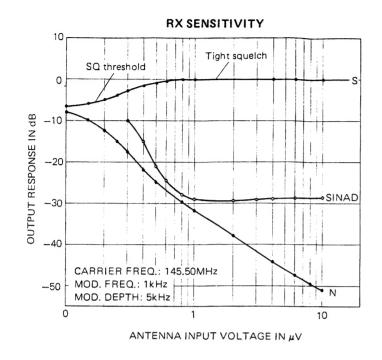


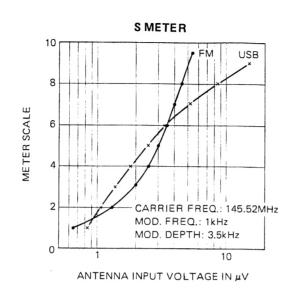
PC BOARD VIEW



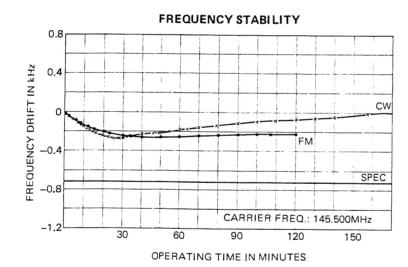
TS-711/811

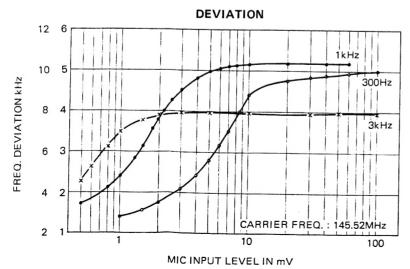
TS-711 REFERENCE DATA



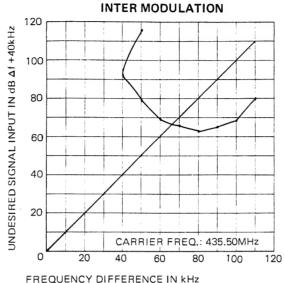


Model Scale	FM	USB
S-9+20	9 μ V	14µ∨
S-9+40	16µV	1.3mV

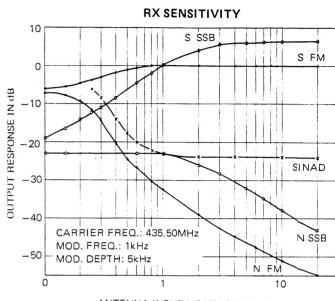




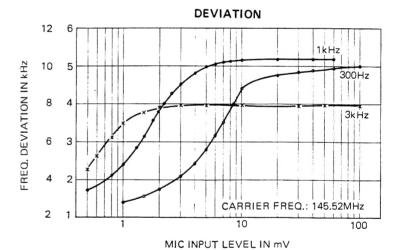
TS-811 REFERENCE DATA

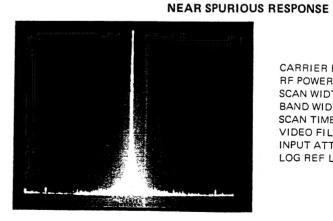


FREQUENCY DIFFERENCE IN kHz UNDESIRED SIGNAL INPUT LEVEL IN dB Δ f +20kHz



ANTENNA INPUT VOLTAGE IN µV





CARRIER FREQ.: 430.00MHz
RF POWER: 10.5W
SCAN WIDTH: 200kHz/DIV
BAND WIDTH: 1kHz
SCAN TIME: 0.5 SEC.
VIDEO FILTER: 10kHz
INPUT ATT.: -20dB
LOG REF LEVEL: -2.5dBm
10dB/DIV

TS-711 SPECIFICATION

[General]			
Frequency range		.144.0 ~ 148.0 MHz (TS-711A)	
		144.0 ~ 146.0 MHz (TS-711E)	
Radio wave mode		A3J (SSB), F2, F3 (FM), A1 (CW)	
Antenna impedance			
Operating temperature		10°C ~ +50°C	
Power voltage		AC120V/240V/220V, 50/60 Hz	
. otto: voitage		DC 13.8V (12V ~ 16V)	
Grounding	************************************		
Power consumption		170W, 6.5A (DC13.8V) at maximum transmission	
1 01101 0011001111		50W, 1.2A (DC13.8V) in receive mode without receiving signal	
Frequency tolerance	(-10°C ~ +50°C)	Within ± 3 ppM (SSB/CW)	
, , , , , , , , , , , , , , , , , , , ,	, , , , ,	Within ± 5 ppM (FM)	
Frequency stability		± 300 Hz 1 ~ 60 minutes after power on	
, , , , , , , , , , , , , , , , , , , ,		Within 50 Hz/every 30 minutes 60 minutes later (after power on)	
Dimensions		W270 × H96 × D260 mm	
		(W279 × H108 × D327 mm) - Projected parts measured.	
Weight			
[Transmitter]			
-		25 watts (One minute transmission/three minutes reception)	
nr output power	•••••	RF output variable from approx. 2W to maximum	
Madulation		Balanced (SSB), Reactance (FM)	
Spurious radiation		Less than -40 dB	
Carrier surpression.	on	Less than -40 dB	
Side band surpression		+ 5 kHz	
Modulation distortion (FM60%)		Less than 3% (300 Hz ~ 3 kHz)	
Wife inspeciance		300 1 000 12	
[Receiver]			
•		Double superheteredune	
CircuitryIntermediate frequency			
intermediate freque	ncy	2nd 10.695 MHz (SSB/CW), 455 kHz (FM)	
Diron-amaielriere	ENA	12 dB SINAD less than 0.22 μV (TS-711A)	
Heceiver sensitivity	FIVI	12 dB SINAD less than 0.2 μ V (TS-711E)	
		S + N/N more than 50 dB at 1.0 mV input	
	SSB/CW/	$S + N/N$ 10 dB less than 0.16 μ V (TS-711A)	
	336/044	$S + N/N = 10 \text{ dB less than } 0.13 \ \mu\text{V} (TS-711E)$	
Paceiver selectivity	FM	More than 12 kHz (–6 dB)	
neceiver selectivity		Less than 24 kHz (-60 dB)	
		More than 2.2 kHz (-6 dB)	
	000,011	Less than 4.8 kHz (-60 dB)	
Sourious response	•••••		
Squelch sensitivity	•••••	Less than 0.16 μV (threshold)	
		Less than 0.2 μ V (threshold)	
		More than 2.0 watts across 8 ohms load (5% dist.)	
	ance		
Audio output impeu			
[DCS control]			
Code		NRZ equal-length code	
Modulation			
Frequency deviation			
i i oquolioy activitor		±5 kHz or less	
		±3.5 kHz Standard	
Mark frequency and	deviation		
Snace frequency and	d deviation	1800 Hz ± 200 PPM	
Code transmission s	need and deviation	1200 bits/second ± 200 PPM	
CORE deligitisatoli a	posa una acertadon		

Note: Circuit and ratings are subject to change without notice due to developments in technology.

TS-811A/B/E

TS-811 SPECIFICATION

430 ~ 450MHz (TS-811A) Antenna impedance 50 ohms DC 13.8V (12V ~ 16V) 240W, 8.5A (DC 13.8V) at maximum transmission (TS-811A) 50W, 1.2A (DC 13.8V) in receive mode without receiving signal Within ± 5PPM (SSB, CW ; 440 ~ 450MHz) Within ± 5PPM (FM) , \pm 1200Hz 1 \simeq 60 minutes after power on Frequency stability (430 ~ 440MHz) Within 50Hz/every 30 minutes 60 minutes later (after power on) W 270 x H 96 x D 260 mm (W 279 x H 108 x D 327 mm) - projected parts measured. 7.2kg (15.6lb) [Transmitter] RF output variable from approx. 2W to maximum Spurious radiation Less than -60dB Carrier surpression Less than -40d8 Side band supression Less than -40dB Modulation distortion (FM 60%) Less than 3% (300Hz \sim 3kHz) 30.265MHz Intermediate frequency 1st 10.695MHz (SSB/CW), 455kHz (FM) 2nd 12dB SINAD less than 0.22µV (TS-811A) S + N/N more than 50dB at 1.0mV input SSB/CW S + N/N 10dB less than 0.13μV (TS-811B/E) S + N/N 10dB less than 0.14µV (TS-811A) Less than 24kHz (-60dB) SSB/CW More than 2.2kHz (--6dB) Less than 4.8kHz (-60dB) Better than 60dB Spurious response Squeich sensitivity Less than 0.16µV (threshold) Auto scan stop level Less than 0.2µV (threshold) Audio output impedance 8 ohms [DCS control] CodeNRZ equal-length code ± 5kHz or less ± 3.5kHz Standard . . 1200Hz ± 200PPM Space frequency and deviation 1800Hz ± 200PPM

Note: Circuit and ratings are subject to change without notice due to developments in technology.

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